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INHIBITORY PROPERTIES OF MAGNESIUM SULPHATE AND THEIR THERAPEUTIC APPLICATION IN TETANUS *

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The object of this communication is chiefly a practical one: I wish to state on the basis of our experimental work and a critical study of recent clinical data, in a brief but precise way, how magnesium sulphate should be used in the treatment of tetanus. It is not improbable that there are many who know that this salt is being used for the treatment of tetanus, but it is possible that many are unfamiliar with the pharmacologic action of this salt on which this method of treatment is based. It is conceivable that it is assumed by some that any favorable therapeutic effect Epsom salt may exert on tetanus rests on its well-known action as a purgative. Furthermore, I cannot free myself from the doubt that the physiologic phenomenon of inhibition is generally well understood, and especially that the term "inhibitory property" which has been used in the title of this paper in connection with the action of magnesium salts will be properly interpreted. My practical statements, therefore, will have to be introduced by a discussion of a theoretical character. In this discussion I shall deal briefly, first, with the phenomena of inhibition, as I understand them, and then proceed to discuss the inhibitory actions of the salts of magnesium which we have observed in our experimental studies and which led up to the use of magnesium sulphate in tetanus.

THE PHENOMENA OF INHIBITION IN BIOLOGY

The best known phenomenon of inhibition is the action of the vagus on the heart. The heart is a muscle which continually performs rhythmic contractions. When a nerve which goes to a muscle is stimulated, the muscle gets into a shorter or longer state of tetanus. But the Weber brothers discovered that stimulation of the peripheral end of the vagus nerve stops the heart in diastole; it inhibits its contractions. The phenomenon of inhibition was thus discovered. In the past seventy years a great many physiologic processes were discovered which had to be interpreted as inhibitory phenomena. I shall not attempt to discuss here the great amount of the corresponding data, which, by the way, have not yet been satisfactorily correlated. But I shall dwell on two or three points which it would be well to keep in mind. Many years after the vagus inhibition came to light, nerve fibers were discovered, the stimulation of which causes acceleration of the heart beats; it was further established that when the inhibitory vagus fibers and the accelerator nerve fibers are stimulated simultaneously, the effect of inhibition prevails during stimulation to such a degree that the activity of the accelerators cannot well be recognized. But both sets of nerve fibers differ in some peculiarities, among others, in the fact that stimulation of the accelerator nerves leaves a long after-effect, while the inhibitory nerve fibers of the vagus manifest only a short after-effect. This leads to the result that when both sets of fibers are stimulated simultaneously, a considerable acceleration of the heart beat follows soon after discontinuation of the stimulation. By this phenomenon the presence of accelerators, or, as they are also termed, augmentors, in a nerve trunk can be recognized. In other functions the opposite relations prevail, namely, the augmentors predominate *during* stimulation and the inhibitors possess the longer *after-effects*. It is readily conceivable that the effect of stimulation of a single nerve trunk could be interpreted in various ways, which, of course, I should not now attempt to analyze. I wish only to add that the above mentioned antagonism applies not only to the motor sphere, but exists also in the functions of secretion and sensation and, furthermore, is applicable also to functions in which the augmenting and inhibitory processes are not represented by well defined nerves or other morphologic units.

It is very useful to have another consideration well fixed in mind. By our daily habits we are used to the mode of thinking that any action, a motion or a secretion, is brought about by a positive cause, a definite stimulus. The absence of such an action seems to need no explanation; a thing, for instance, does not move simply because there is no cause for its motion. This, however, is not true even in the inorganic physical world; a thing does not move in a certain direction exclusively because it is prevented by an opposing force of exactly similar energy which works in an exactly opposing direction. By an analysis of numerous living phenomena I came to the conclusion that *all living functions are continually controlled by two opposing forces: augmentation or action on the one hand, and inhibition on the other hand.* The state of every function at every moment depends on the relation and the predominance of each of these opposing functions. Taking motion as an instance, the maximum effect of the action factor in a living body is tetanus and the maximum effect of inhibition is complete relaxation. The various degrees of tonus

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present an intermediary state in which one of the opposing forces is more or less predominating. For several decades this theory, and especially the notion that inhibition is a most extensive factor in all manifestations of life, played a dominating part in all my researches; it was a working factor in my early investigations of the physiologic functions of deglutition and of respiration.

THE INHIBITORY ACTION OF MAGNESIUM SALTS

About nineteen years ago I studied the effect of intracerebral injections of small quantities of various salts. While the effect of nearly every kind of salt consisted in the causation of a more or less intense and characteristic convulsive attack, I found that after an intracerebral injection of a few drops of a 5 per cent. magnesium sulphate solution, the animal turned on one side and remained for hours in a stuporous condition. Under the influence of the conception that inhibition is an important factor in the functions of the living body, the question arose in my mind whether or not a definite relation exists between the magnesium ion in the body and its various states of inhibition or depression. A review of the literature revealed that the action of magnesium salts had been very little and only superficially studied. The same may be said of the researches concerning the phenomena of inhibition; the various degrees of depression in the various functional activities were rarely united under a single general point of view. It was mostly the various forms of excitation (action) which fascinated the attention of the physiologists and were investigated as a problem of irritability. On the basis of the above formulated question, I investigated in the last dozen years in the department of physiology and pharmacology at the Rockefeller Institute, with Dr. John Auer and other associates, various actions of magnesium on the animal body. After a long experience I may say today that the *dominant* action of magnesium salts on the living body, no matter by which way it is administered, consists indeed in *depression* or *inhibition*. I shall, of course, not enter here on details. But I wish to mention here one or two facts very briefly. When, as it was found originally by Dr. Auer and myself, after the administration of a very small amount of ether, insufficient to cause anesthesia, an inefficient amount of magnesium sulphate is injected intramuscularly, a profound anesthesia follows which can be maintained for several hours. Consciousness is the first thing which is completely abolished. The unconsciousness is, as a rule, accompanied by a great muscular relaxation, while all the reflexes may still remain nearly unaffected. With a larger dose of magnesium the reflexes, too, begin to disappear, and with a still further increase of the magnesium dose the motor nerve endings become paralyzed—a curare-like action, which is accompanied, of course, by a simultaneous profound central action. These facts were especially confirmed in a number of operations performed on human beings by Dr. Peck, and in a few cases also by Dr. Elsberg.

Chemically calcium and magnesium are closely related substances. Biologically, however, they are strikingly antagonistic to one another. Auer and I found that an animal which may have been completely paralyzed by a magnesium salt can be restored within a fraction of a minute by an intravenous injection of a calcium salt. I must add, however, that this applies essentially to conditions in which the animal was exposed to the effect of magnesium for a comparatively short time. When the animal is saturated with magnesium for a longer period, the antagonistic action of calcium is less evident and is even not without some danger.

At the last meeting of the international physiologic congress in Groningen (1913) I offered the following hypothesis in explanation of the mentioned phenomena: As is well known, the various neurons are not connected by direct continuity but by mere contact. That place of contact is termed by Sherrington "synaptic membrane." The connection between motor nerve and muscle is also not of a very solid character, and is termed by some also synaptic membrane. My theory assumes that the magnesium solution contained in the lymph bathing the synaptic membrane enters with ease into these spaces, and interrupts the passage of nervous afferent impulses from one neuron to the other, especially of such impulses for which there is a less readily prepared path for transmission than the paths existing for normal active reflexes. Furthermore, the synaptic membranes between two neurons offer less resistance to the entrance of the magnesium solution than the more solid membranes between motor nerves and the muscle. What is said of magnesium applies also to calcium. When it is present in the lymph in a quantity larger than normal, it enters readily into the synaptic membrane and displaces or neutralizes there the obstructing or inhibiting magnesium. When, however, magnesium, by its long presence in the lymph, manages in some way to enter into the inside of the nerve cell, the calcium is incapable of readily dislodging or neutralizing there the magnesium. This theoretical view may have some bearing on the mode of the therapeutic action of magnesium salts in tetanus.

THE TREATMENT OF TETANUS BY MAGNESIUM SULPHATE

The effect of magnesium salts was investigated extensively on animals and in a comparatively considerable degree also on human beings by different modes of administration: by intravenous, intraspinal, intramuscular and subcutaneous injections. In all modes of administration the character of the effect is, as stated before, unmistakably depressing in character. In intravenous application the effect is rapid, but is comparatively of short duration, and when so used it must be guarded against possible harmful incidents. The inhibitory effect of an intraspinal injection sets in fairly early and may last even longer than twenty-four hours. Intramuscular injections have a fairly early effect, but only of a comparatively short duration. Subcutaneous injections act slowly, but have a cumulative action.[1]

I shall deal here exclusively with the favorable action of magnesium sulphate on tetanus. The action may appear to some as merely a symptomatic one; it relieves the convulsions. But even if this would be indeed, its only favorable effect, it would be of inestimable value, since the suffering in tetanus and the fatal outcome of this horrible disease is nearly exclusively due to the consequences of the tetanic symptoms. And I may assert that no other remedy is capable of relieving the furious symptoms to such a satisfactory degree as do the injections of magnesium

1. Local applications also exert unmistakably some favorable effect, for instance, in burns, erysipelas, pains, etc.; but I shall not deal here with this side of the subject.

sulphate. But on the basis of the above mentioned theory, we may expect from the use of magnesium sulphate perhaps even more than a symptomatic action: it is possible that the magnesium salts, accumulated in the lymph, enter into the synaptic membrane between two neurons and thus prevent the wandering of the tetanus toxin through higher neurons and into the corresponding nerve cells.

Soon after our publications on the inhibitory action of magnesium salts, clinical cases of tetanus, in which magnesium sulphate was used, began to appear in the medical literature. This was especially the case after the favorable report published by the famous surgeon, Thedor Kocher of Berne. At the outbreak of the present war, numerous cases of tetanus were treated by magnesium sulphate. I shall not enter here on an analysis of the extensive literature on that subject. I wish only to say that a study of this literature convinced me that in many instances the writers were familiar neither with the pharmacologic principles underlying this treatment, nor with its indications or contraindications, and some of the conclusions which they derived from their observations were hastily drawn and without proper criticism. Some did not know enough to distinguish between those symptoms which are due to the disease and those which were brought about by an improper use of the magnesium salts.

In the following I shall try to lay down some rules for the use of magnesium sulphate in tetanus as I learned them from our extensive experimental investigations and from an unbiased, critical study of the clinical literature of that subject. However, in employing magnesium sulphate for the treatment of tetanus and in drawing conclusions from such observations, there are a few things which one has to keep in mind, to which I wish to call attention before I proceed to describe the methods to be used, their respective advantages and disadvantages, and the procedures which are necessary to meet the latter.

There are advanced and dangerous forms of tetanus which cannot be cured, or even relieved temporarily, by any method of treatment; the failure of magnesium in such cases should in no way militate against the possible usefulness of this method. It should be further borne in mind that the treatment of tetanus by magnesium in no way precludes a simultaneous treatment with antitetanic serum. The suffering of tetanic patients is too great and the outlook is too grave to permit the experimental method of treatment in human beings, that is, to test one remedy at one time. Even if magnesium sulphate would do no more than relieve the most severe symptoms, the convulsions and the tetanus, it would be a duty to use it. If properly used, it is certainly capable of relieving severe symptoms in many cases better than any other remedy. Finally, it is necessary to know the possible dangers which may be brought about by the use of magnesium salts; at the same time it is necessary to know well the incidents of tetanus, in order not to look on them as effects of the magnesium injection; this confusion occurred in many instances.

Magnesium may bring about a temporary reversible paralysis of the respiration. I shall discuss later how to avoid this incident and how to meet it when it occurs. The circulation is not readily affected by the injection of the magnesium salt, and such an incident ought never to occur. Magnesium salts cause a temporary appearance of hyaline casts in the urine (Peck, Gates) which disappear readily and early. On account of this effect, magnesium injections, when given in larger doses, should for the present not be used in cases of outspoken nephritis. Intravenous injections of magnesium salts cause a considerable hyperglycemia with only a mild glucosuria (Kleiner and Meltzer); it is, however, a merely temporary phenomena and is no contraindication to the use of magnesium salts.

METHODS OF ADMINISTRATION OF MAGNESIUM SALTS IN TETANUS

1. *Intraspinal Injection.*—It may be stated that for adults this method of administration gives the best results. Magnesium sulphate (Epsom salt, $MgSO_4 + 7\ H_2O$) should be administered in a 25 per cent. solution, 1 c.c. of the solution to each 20 pounds of body weight. In cases of strong opisthotonus it is advisable that the injection be preceded by a moderate general anesthesia, ether or chloroform, which, however, should be discontinued immediately after the injection is completed. The injection should be made in the lumbar region at the usual place and with the usual precautions. The patient should then be placed flat on the back. The relief may begin to become manifest in a short time after the injection, and leads, as a rule, to a complete relaxation, lasting twenty-four hours and longer. During this period the patient is resting, relieved, partakes of food and may fall into a deep sleep. Sooner or later, however, stiffness and convulsive seizures will return. A second injection ought to be given before the tetanic conditions attain their original intensity. The second dose, however, ought to be smaller, for instance, about 0.8 c.c. per 20 pounds. The repeated injections ought to be adapted to the conditions of the patients which mostly do not demand a complete relaxation. It may be necessary to catheterize the patient; this and the occasional rise of temperature do not present contraindications to this method of treatment. The only serious phenomenon which may complicate this procedure is the setting in of a weakening or a temporary standstill of the respiration, due undoubtedly to a (reversible) paralysis of the respiratory center by the magnesium. As a rule, when the above described procedure is followed out carefully, this serious incident does not occur. It is, however, well to know how to proceed when this complication makes its appearance. A needle should be introduced into the lumbar canal, through which some of the spinal fluid should be permitted to run out, and then the canal should be washed out several times with a Ringer solution. During this procedure the upper part of the body should be kept elevated, to facilitate the escape of the fluid from the spinal canal. Also artificial respiration should be instituted with air or oxygen, for both of which my apparatus of pharyngeal insufflation, which I describe elsewhere, is the simplest and the most suitable one. Both the washing of the canal and the artificial respiration should be instituted at an early stage, that is, as soon as the respiration begins to become slow or shallow; the recovery will follow rapidly. Action should not be delayed until the respiration actually ceases; the preceding prolonged asphyxia may be a hindrance to the prompt recovery. The use of calcium or physostigmin, which I shall mention in describing the other methods of application, are of no avail in the intraspinal method. As stated before, the occurrence of a respiratory com-

plication is not to be feared, when used in adults according to prescribed rules. In very young children the initial dose should not be higher than 0.5 c.c. of a 25 per cent. solution per 20 pounds. For the present, it is perhaps better to advise not to use it in children as a routine method (Kocher). The intracommunication between the various sections of the intraspinal canal is probably much freer in very young children than in adults.

2. *Subcutaneous Injection.*—This method is incapable of relieving severe acute attacks of tetanic conditions unless used in immense doses. On the other hand, small doses used three or four times a day undoubtedly gradually reduce the increased irritability, and may lead even in severe cases to a final recovery.[2] The dose should be for adults about 1.2 c.c. and for children from 0.6 to 0.8 c.c. of a 25 per cent. solution per kilogram of body weight three to four times a day. It should be begun as soon as symptoms of a local tetanus (drawing of the muscles in a wounded extremity, slight difficulty in swallowing, slight trismus, etc.) make their appearance, and be continued until all tetanic symptoms disappear. The use of a moderate local or general anesthetic facilitates these injections, which should be made under the necessary aseptic or antiseptic precautions. It should be borne in mind that such injections are incapable of offering a rapid relief in acute tetanic attacks and their value should not be discredited by their failure to relieve satisfactorily acute dangerous seizures.

3. *Intravenous Injections.*—Magnesium salts disappear rapidly from the circulation; this method is therefore inappropriate for the purpose of bringing about a complete cure; besides, under prolonged use, it may act unfavorably on the circulation. In a previous communication I advised against its use. However, after a series of experiments (with Dr. Auer) on tetanic dogs and after the clinical communications of Hans Kohn and of Walter Straub, I became convinced that this method, if used properly, may save life in severe, dangerous tetanic attacks of the pharynx, the larynx or the diaphragm. It should be used in a 6 per cent. solution from 2 to 3 c.c. per minute (or in a 3 per cent. solution from 5 to 6 c.c. per minute) and should be discontinued immediately as soon as the respiration becomes slow or shallow.

As a rule, the respiration improves soon after the infusion of magnesium is discontinued. If the improvement is not prompt enough, a *small amount of calcium chlorid* (2.5 per cent.) should be slowly injected through the venous cannula, used for the infusion of magnesium, until the respiration shows a definite improvement, which may occur in less than thirty seconds. The calcium injection should then be immediately discontinued; otherwise all the previous tetanic manifestations may make their reappearance.

The striking favorable effects of intravenous injections of magnesium may disappear in from thirty to forty minutes, but the actual dangerous symptoms may be obviated for a much longer period.

4. *Intramuscular Injection Plus Ether Inhalation.*—In experiments of Auer and myself, it was established that an injection of only 2.4 c.c. of a 25 per cent. solution of magnesium sulphate, given intramuscularly, combined with a temporary mild ether inhalation, is capable of bringing about a considerable relief in less than half an hour, and may last for several hours. This method, however, is not appropriate for frequent repetitions.

Should it be found, by unforeseen circumstances, that during the use of subcutaneous or intramuscular injections the respiration becomes affected, an intramuscular injection of a 2.5 per cent. solution of calcium chlorid may slowly neutralize the unfavorable respiratory effect, without bringing back serious tetanic symptoms. I may add here that an injection of about 1 mg. of physostigmin is also often capable of improving the respiration.

SUMMARY

The best general plan for treatment of tetanus would seem to be as follows:

In each and every case of tetanus, 1.2 c.c. of a 25 per cent. solution of magnesium sulphate should be given by subcutaneous injection three or four times a day throughout the entire disease.

When the disease is complicated by severe tetanic attacks, 1 c.c. of a 25 per cent. solution for every 10 kg. (20 pounds) body weight (in adults) should be given by the intraspinal method.

When the disease is attended by immediately dangerous tetanic complications, from 2 to 3 c.c. per minute of a 6 per cent. solution of magnesium salts should be given then by an intravenous injection until dangerous symptoms subside or the respiration becomes shallow or too slow.

When the respiration seems to become impaired in consequence of the administration of magnesium salt by the intravenous, intramuscular or subcutaneous methods, calcium chlorid should be injected in the manner described above.

It is advisable to have at hand an apparatus of intrapharyngeal insufflation ready for use, whenever the respiration becomes slow or shallow.

Finally, the simultaneous treatment by antitetanic serum should not be neglected.

2. The following case of von Rosznowsky (Therap. d. Gegenw., 1914, p. 435) is very instructive: Wound from a shot in the neck, August 27. On the 31st the first appearance of tetanic symptoms. Treatment began, September 4, with injections of antitetanic serum. On the 6th, much worse. On the 7th starting magnesium treatment: 10 c.c. of a 25 per cent. solution of magnesium sulphate injected subcutaneously four times daily. Early relief and gradual subsidence of all serious symptoms. September 14 and 15, only two injections daily. Condition worse again. From the 16th on, returned again to four injections daily. Rapid progressive improvement. Stopped injections of magnesium on the 24th. Patient cured; got out of bed, October 1. In the course of seventeen days, patient received by subcutaneous injections 530 c.c. of a 25 per cent. solution of magnesium sulphate. Of the sixty injections one gave an abscess. To sum up: early appearance of tetanus, severe symptoms, visible relief and improvement under magnesium treatment, some relapse follows a temporary reduction in the number of injections, improvement after returning to the previous number. Complete cure. No other treatment and no complications or sequelae.

Making the Cure.—Where wisdom fears to venture, unwisdom and cupidity find ample room. The wise physician knows that there are ills that drugs cannot cure; that generally only aid or relieve; and that to obtain even this aid efficiently and safely, the existing scientific knowledge is none too great. Not so the unwise. He who sees in disease only a name, to him a name is sufficient cure. Let there be a mixture with a convenient and suggestive name and a pleasant taste, a compendious index of diseases and symptoms—and a lively imagination—and the cure is accomplished. Few things could be easier, and few more false. It is not surprising that the "man on the street" should fall into these errors; it is sad that any physician should be misled by the sophistry of interested drug vendors.—Editorial in *Cleveland Med. Jour.*

THE SYSTOLIC BLOOD PRESSURE IN PREGNANCY

OBSERVATIONS ON FIVE THOUSAND CONSECUTIVE CASES IN THE PREGNANCY CLINIC OF THE BOSTON LYING-IN HOSPITAL

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The Boston Lying-In Hospital maintains a pregnancy clinic for the care of patients who are to be confined either in the hospital or in the outpatient department. At her first visit, every applicant is given a thorough physical and obstetrical examination, which is repeated as occasion demands. Each time that she comes to the clinic the urine is examined for albumin and the systolic blood pressure is determined by the mercury or aneroid sphygmomanometer and palpation of the radial pulse. She is instructed in the hygiene of pregnancy, and any necessary medical or other treatment is prescribed. Normal patients are directed to return every two weeks; those presenting complications at more frequent intervals. Every patient living in Boston or the adjacent cities of Cambridge, Somerville and Chelsea is seen in her home by a nurse between her visits to the clinic, and any abnormality found is reported to the physician in charge and the patient urged to return immediately.

This paper is based on blood pressure observations in 5,000 consecutive cases, and covers the period from Feb. 28, 1912, to March 11, 1915; 4,472 patients were delivered by the hospital or outpatient services, and their subsequent obstetric histories are definitely known. The remaining 576 were confined by private physicians, other institutions, or midwives. The average patient first presents herself at the clinic about the seventh calendar month, and makes several visits before confinement. There is a growing tendency, however, to apply for treatment earlier in pregnancy, and this is earnestly encouraged. The total number of observations, therefore, is considerable and is sufficiently large to point to certain definite conclusions.

Maternity hospital statistics have always been misleading, since the large number of emergencies and serious conditions habitually treated in such institutions give a false impression as to the frequency of complications. Pregnancy clinic figures, on the other hand, represent the average run of cases, and should give the general physician a much better idea of what he is likely to meet in private practice.

I have attempted to ascertain (1) the normal range of blood pressure in pregnancy, (2) the significance of low blood pressure, (3) the significance of high blood pressure, particularly as regards the toxemias of pregnancy, and (4) certain results obtained in the prevention of eclampsia by the appropriate treatment of these toxemias.

1. THE NORMAL RANGE OF BLOOD PRESSURE IN PREGNANCY

The lowest recorded blood pressure in this series was 80; the highest, 225. Newell[1] places the limits of normal blood pressure in pregnancy from 100 to 130, and Haussling[2] from 100 to 135. I found that four fifths of all patients were never below 100 or above 130. The range between these points, therefore, may fairly be considered normal, for the great majority of cases. As shown by Table 1, low blood pressure was about four fifths as common as high blood pressure.

1. Newell, F. S.: The Blood Pressure During Pregnancy, THE JOURNAL A. M. A., Jan. 30, 1915, p. 393.
2. Haussling: Jour. Med. Soc. New Jersey, 1912, ix, 242.

2. THE SIGNIFICANCE OF LOW BLOOD PRESSURE

In a review of the blood pressure in pregnancy, Lynch[3] says, "Comparatively low blood pressure may be found in obstetric patients with no other evidence of abnormality in health." As has been previously stated, a blood pressure below 100 occurred in 9 per cent. of the present series. It is, therefore, fairly common. But Lynch goes on to state that "through the study of blood pressure we may have a forewarning as to the possibility of a complication fortunately rare at the present time, i. e., shock following labor not associated or resulting from hemorrhage." In his series of 100 private cases there were two in which there was a blood pressure below 90 during pregnancy. The present series of 5,000 cases showed that in twenty-two times as many pregnancies as reported by Lynch of markedly low blood pressure there was not a single instance of shock unaccompanied by hemorrhage following labor.

TABLE 1.—OCCURRENCE OF NORMAL, LOW AND HIGH BLOOD PRESSURES

Blood Pressure	Cases	
	Number	Per Cent.
Always between 100 and 130	4,031	80
Below 100 once or more	426	9
Above 130 once or more	543	11

Three patients were not delivered by the hospital service. Of the remaining forty-four, seven had a blood pressure of eighty, which was the lowest recorded in the series. One patient had moderate shock following the manual extraction of a retained placenta, but her blood pressure was low only once and reached normal before delivery. All others had uneventful confinements.

TABLE 2.—BLOOD PRESSURE BELOW 90

	Cases
At last visit to clinic only	13
At one visit, but rising before delivery	29
At two visits or more, not rising before delivery	3
At two visits or more, but rising before delivery	2
Total	47

An additional review of moderately low blood pressure (between 90 and 100) shows that of the 357 cases delivered by the hospital service, shock unaccompanied by hemorrhage did not occur once after normal delivery, and only four times after operative delivery. In only one of the four operative cases was the blood pressure found between 90 and 100 at more than one visit to the clinic.

TABLE 3.—BLOOD PRESSURE BETWEEN 90 AND 100

	Cases
At last visit to clinic only	175
At one visit, but rising before delivery	157
At two visits or more, not rising before delivery	25
At two visits or more, but rising before delivery	26
Total	383

A comparison of Tables 2 and 3 will show that while occasional instances of low blood pressure are frequent, a pressure consistently below 90 occurred only once in 1,000 pregnancies, and a pressure consistently between 90 and 100 once in 100 cases. This tendency to low blood pressure is apparently an individual peculiarity of the patient, and does not seem to be followed by a poor reaction to labor.

3. Lynch: Surg., Gynec. and Obst., 1913, xvii, 472.

I believe with Lynch that shock occasionally follows labor without apparent reason. Such an occurrence seems to be more common in private than in hospital practice, and is particularly likely to succeed some comparatively slight operative procedure, such as an easy low forceps delivery. The Crile theory of shock seems to offer the best explanation. Following rapid evacuation of the uterus there comes a marked lowering of intra-abdominal pressure, and thereby the external mechanical support of the splanchnic vessel walls is diminished. Should vasomotor control be inefficient, these vessels become enormously distended with blood, and the patient bleeds into her own abdominal vascular system. The resultant anemia of the medulla completes the familiar picture of surgical shock. It is evident that such a condition presupposes a certain instability of vasomotor equilibrium; but that it may be foretold during pregnancy by a low blood pressure is not borne out by our observations.

TABLE 4.—ELEVATED BLOOD PRESSURE, ALBUMINURIA AND TOXEMIA ACCORDING TO AGE

Age	No. of Cases	Percentage of Elevated Blood Pressure	Percentage of Albuminuria	Percentage of Toxemia
Under 20	421	11.4	20.0	2.8
From 20 to 30	3,165	8.9	13.7	1.0
From 30 to 40	1,283	14.3	12.2	1.5
From 40 on	131	22.1	17.5	1.5

3. THE SIGNIFICANCE OF HIGH BLOOD PRESSURE (OVER 130)

I have attempted to point out what influence, if any, age, race or nationality and parity had on elevated blood pressure, and have also noted any apparent effect on albuminuria and toxemia. Since in this series all patients considered toxemic during pregnancy exhibited at some time both an elevated blood pressure and albuminuria, the term "toxemia" is applied to those who had these two manifestations of the disease, plus one or more of the other recognized signs and symptoms, such as headache, disturbances of vision, persistent vomiting, epigastric pain, antepartum hemorrhage and edema.

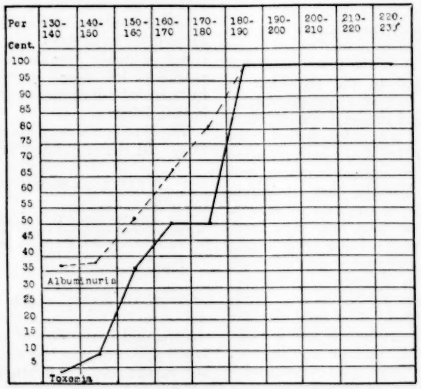

Chart 1.—Curves of toxemia and albuminuria expressed in terms of increasing blood pressure.

TABLE 5.—ELEVATED BLOOD PRESSURE, ALBUMINURIA AND TOXEMIA ACCORDING TO NATIONALITY

Country	No. of Cases	Percentage of Elevated Blood Pressure	Percentage of Albuminuria	Percentage of Toxemia
Russia	2,322	9.2	11.2	0.8
America	873	15.1	22.2	1.8
Italy	606	5.1	9.0	1.2
Austria	215	7.9	9.3	0.0
Ireland	210	11.9	17.6	2.4
Poland	172	5.8	8.1	0.6
British North America	138	17.7	18.3	3.2
Negro	105	13.4	25.7	3.8

Age.—Albuminuria and toxemia occurred most frequently in gravidas under 20. In this class of patients, elevated blood pressure was also fairly frequent and was, apparently, more commonly then a sign of toxemia than later in life.

Elevated blood pressure was most common in elderly gravidas, but with them was seemingly less important as an evidence of toxemia. Many women in the neighborhood of 40 habitually ran a low normal blood pressure, but a stationary pressure of moderate elevation was more common with them as a class than with younger women. In the decade between 20 and 30, elevated blood pressure and toxemia were least common.

Race and Nationality.—Elevated blood pressure was most common among the British North Americans, Americans, negroes and Irish. These classes also showed the highest proportion of albuminuria and toxemia. Toxemia appears to be uncommon among the Russians (practically all Jews) and the Slavs (Austrians and Poles).

Two races are represented, the white and the negro. Of the white race there were thirty different nationalities. Only those with at least 100 representatives have been considered in Table 5.

Parity.—In primiparas there was a fairly high percentage of elevated blood pressure which was not accompanied by a correspondingly high percentage of toxemia. It will be seen in comparing Tables 5 and 6 that youth has apparently more influence than primiparity on the occurrence of toxemia. In general, the frequency of elevated blood pressure tended to increase with successive pregnancies from the second to the eighth. The percentage of albuminuria showed nothing characteristic, nor did the number of pregnancies appear to have much influence on the frequency of toxemia.

One patient was a sedecipara and two were quindeciparas. No class containing less than 100 individuals has been considered.

TABLE 6.—ELEVATED BLOOD PRESSURE, ALBUMINURIA AND TOXEMIA ACCORDING TO PARITY

Parity	No. of Cases	Percentage of Elevated Blood Pressure	Percentage of Albuminuria	Percentage of Toxemia
Primiparas	1,679	12.2	14.8	1.1
Secundiparas	1,036	7.5	11.7	0.8
Tertiparas	696	7.9	11.8	1.0
Quartiparas	508	11.8	14.6	1.4
Quintiparas	360	8.9	10.6	0.6
Sextiparas	261	10.7	9.2	0.8
Septiparas	177	13.8	11.4	0.6

Comparative Values of Albuminuria and Elevated Blood Pressure as Signs of Toxemia.—(*a*) Frequency of Uncomplicated Albuminuria and Elevated Blood Pressure: Uncomplicated albuminuria was one and one-third times as frequent as uncomplicated elevated blood pressure. Often, no doubt, it was due to a contamination from leukorrheal discharge. Several

writers, however, have reported that albumin may be obtained in catheter specimens during pregnancy in a considerable number of cases, without any pathologic significance being attached to it. Elevated blood pressure then, per se, is a more frequent sign of toxemia. Albuminuria without elevated blood pressure or toxemia occurred in 463 cases, and elevated blood pressure without albuminuria or toxemia in 340 cases.

(*b*) Priority of Appearance: An elevated blood pressure is often the first sign of an approaching toxemia. In the present series it preceded albuminuria twice as often as it followed it. The majority of patients, however, presented both albuminuria and elevated blood pressure at the same visit to the clinic. Elevated blood pressure preceded albuminuria in fifty cases, accompanied albuminuria in 113 cases, and followed albuminuria in twenty-four cases.

(*c*) Frequency Percentage of Albuminuria and Toxemia with Increasing Elevation of Blood Pressure: One patient in thirty-two with a blood pressure between 130 and 140 had toxemia, and one patient in eleven with a pressure between 140 and 150. Between 150 and 160, the frequency suddenly rose to more than one in three, while one half of all patients between 160 and 180 developed the disease. All patients above 180 had toxemia. The abrupt rise in both toxemia and albuminuria when 150 is reached indicates in a striking manner that the danger point lies near that point (Chart 1).

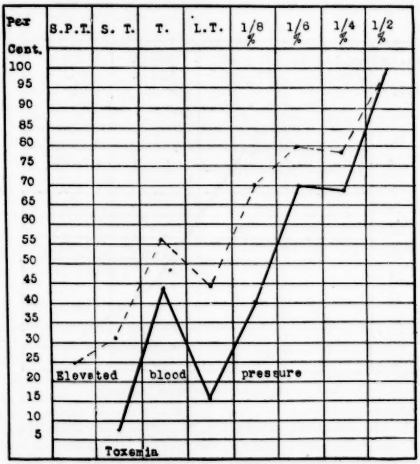

Chart 2.—Curves of toxemia and elevated blood pressure expressed in terms of increasing albuminuria. The degree of albuminuria is expressed in the common clinical terms: S. P. T., slightest possible trace; S. T., slight trace; T., trace; L. T., large trace.

(*d*) Frequency Percentage of Blood Pressure and Toxemia with Increasing Degrees of Albuminuria: The curve of toxemia shows a steadier rise when expressed in terms of increasing blood pressure, as in Chart 1, than when expressed in terms of increasing albuminuria, as in Chart 2. Moreover, the blood pressure curve in Chart 2 is a faithful copy of the toxemia curve, while the albuminuria curve in Chart 1 bears a much less striking resemblance to the line of toxemia. With less than a slight trace of albuminuria, no cases of toxemia were encountered.

In summarizing, it is fair to say that elevated blood pressure is more commonly an index of toxemia than albuminuria, and that it is apt to be an earlier sign. The degree of elevation points more surely to the likelihood of toxemia than does the degree of albuminuria. Both, however, are of the utmost importance.

Elevated blood pressure without albuminuria or evidences of toxemia occurred in 340 patients. Many of those with occasionally elevated pressure were admittedly constipated, and doubtless others were equally so, although denying it stoutly. In the vast majority the rise was temporary, and promptly succumbed to the generous administration of magnesium sulphate. A number, however, had a persistently elevated pressure, although it rarely reached the upper levels. Apparently this condition was normal for these patients, just as low blood pressure was normal for another group.

Toxemia.—Sixty-four patients, which was 1.4 per cent. of the total number, developed signs and symptoms of toxemia. Ten of these patients ceased attendance at the clinic and were delivered elsewhere. In the sixty-four patients, nephritic toxemia, defined by Williams as "associated with primary lesions of the kidneys," and "usually noted in women who were suffering from chronic nephritis prior to pregnancy, or in whom the acute process originates during that period," occurred six times, and twice in one patient. The remaining fifty-eight cases were true preeclamptic toxemias.

(*a*) Seasonal Variations: Chart 3 characterizes toxemia as a disease of cold rather than of warm weather, thus confirming the impression we have had at the Lying-In Hospital. It is not unlikely that increased diaphoresis and consumption of water in the warm season aids in the elimination of the toxins on which this disease is supposed to depend.

(*b*) Signs and Symptoms: Edema and headache were most common. True epigastric pain was rare and usually of ominous prognosis. No antepartum bleeding was noted in any case. Apparently, then, it is not a common sign of this disease.

(*c*) Albuminuria: All toxemic patients had more than the slightest possible trace of albumin.

(*d*) Elevated Blood Pressure: A pressure above 130 was noted in all toxemic patients at some time during pregnancy. Twenty-seven patients had an elevated blood pressure when first seen at the clinic. Thirty-seven had a progressively rising pressure, often from a low level. I believe that this is a better sign of approaching toxemia than a moderately elevated pressure which remains stationary, a point which has been frequently emphasized by Newell.

Eclampsia.—Nine patients out of 4,472, the number actually delivered by the hospital service, had eclampsia. This is 1:497, which is about the same ratio as that given by Williams: 1:500. Five were primiparas and four multiparas. Eight of these patients had toxemia. The other, whose blood pressure was 94 with a negative urine and no evidences of toxemia at her last visit to the clinic six weeks before labor, had two postpartum convulsions. No examination of the urine was made at that time, and the blood pressure was not determined, although the record states

that the patient's pulse was of high tension. The moral pointed by this experience is that the blood pressure should always be taken both at the time of labor and immediately following it.

Six of the nine eclamptics did not report to the clinic for over a month before the onset of the seizures, and two of these patients died. Only three patients who faithfully followed directions developed eclampsia, and only one of them died.

With the exception of the eclamptic whose last recorded blood pressure was 94, there was only one patient whose pressure had not reached at least 160 before convulsions occurred. Her highest point was 140, which substantiates a statement often made by other writers that eclampsia may occur with a blood pressure of only moderate elevation. The last previous record of this patient's blood pressure was only 110, which was apparently normal for her. This case again indicates that a rising blood pressure from a low level, even though it does not pass the arbitrary danger mark, may be a sign of impending trouble.

4. TREATMENT OF TOXEMIA

In general, the treatment at the Boston Lying-In Hospital has followed certain definite lines, although not all members of the staff in the past have by any means concurred in the ideas here expressed. All patients in the pregnancy clinic showing albuminuria or a blood pressure above 130 are at once put on a meat-free diet with restricted salt and forced fluid. The patient is directed to take large doses of magnesium sulphate and to return to the clinic in a few days. Should evidences of toxemia develop, she is admitted to the hospital, where she is put to bed and the same treatment more vigorously carried out. Should her condition grow worse or fail to improve, the majority of the staff terminate pregnancy without waiting for convulsions to occur. In the past, however, eliminative treatment has occasionally been carried beyond this point, not always with favorable results.

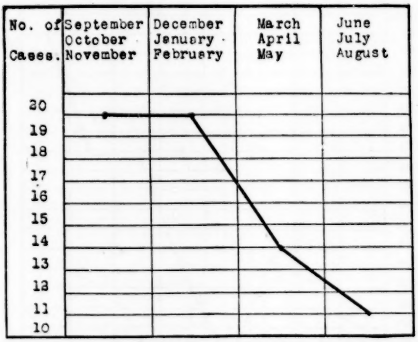

Chart 3.—Toxemia according to seasons.

Eliminative treatment alone was successful in twenty-nine of the fifty-eight cases. The process quieted down, and pregnancy was allowed to continue or labor ensued. In eleven cases labor was induced by Voorhees bags, which acted satisfactorily in nine.

One patient died undelivered after eliminative treatment. A second died after a five months' spontaneous miscarriage, and the third after a full term normal delivery. Although nine eclamptics is too small a number on which to base any conclusions, it is quite evident that none of the women who were lost died as the result of a so-called violent operative delivery.

CONCLUSIONS

1. In 80 per cent. of pregnant women, the blood pressure ranges from 100 to 130.

2. In 9 per cent. the blood pressure may be below 100 once or more. A blood pressure below 90 does not mean that the patient will have shock unaccompanied by hemorrhage at the time of confinement.

3. In 11 per cent. of cases, the blood pressure may be above 130 once or more. Age, nationality and parity seem to have some influence on blood pressure. High blood pressure in the young is more frequently a sign of toxemia than in those over 30.

4. Elevated blood pressure is more commonly an index of toxemia than is albuminuria, and it is apt to be an earlier sign. The degree of elevation points more surely to the likelihood of toxemia than does the degree of albuminuria. Both, however, are of the utmost importance.

5. Isolated cases of elevated blood pressure unaccompanied by albuminuria or evidences of toxemia occurred not infrequently. Usually they responded to free catharsis. Some pressures remained elevated in spite of treatment, and apparently were normal, during pregnancy at least, for the patients who exhibited them.

6. A progressively rising blood pressure, often from a low level, even though it never reaches the arbitrary danger point, should be regarded with apprehension as a most valuable sign of approaching toxemia.

7. Toxemia is much more common with a blood pressure above 150 than it is below that point.

8. Most cases of eclampsia occurred with a pressure of 160 or more. Eclampsia may, however, occur with a pressure of only moderate elevation.

9. All toxemics developed both albuminuria and elevated blood pressure.

10. While the incidence of eclampsia in this series is about the same as the figures usually given, it is significant that two thirds of the patients who developed convulsions absolutely neglected advice and refused to return to the clinic. Had these patients been discharged against advice during pregnancy for disobeying instructions, very favorable statistics would have been obtained. The hospital feels that it would be most unjust to the ignorant foreigners who constitute the vast majority of its patients to desert them when they most needed skilled hospital care. With proper cooperation from the patients, and eliminating the fulminating cases which develop in a few hours, there is no doubt that eclampsia should be practically a preventable disease.

96 Bay State Road.

State Production of Quinin.—In Italy, according to *Commerce Reports*, for several years the government has manufactured quinin for use against malaria. For the fiscal year ended June 30, 1914, according to the report of the director of the laboratories, the total receipts from the sale of quinin were $611,283, on which a net profit of $159,979 was realized. The whole of this sum was devoted to scientific investigation, draining of unhealthful districts, distribution of free quinin, and other preventive and curative measures against malaria. The laboratories are situated at Turin, Rome and other cities.

NONADHERING SURGICAL GAUZE

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It is essential to give a summary of the various surgical dressings experimented with in order to convey the extent of the author's research work during the past two years.

WORK WITH VARIOUS DRESSINGS

Plain Surgical Gauze.—For the treatment of open wounds presenting raw surfaces the plain gauze of narrow mesh is preferable to gauze of wide mesh as commonly used today for surgical dressings. The narrow mesh does not present wide apertures through which the granulations will grow, and when removed, the granulations are less interfered with. The absorbing quality of the narrow mesh is superior to that of a wider mesh. The gauze of wide mesh, owing to the width of apertures between the threads, permits the granulating tissue to extend upward and overlap the threads, so that in removal of the dressings the granulations are lacerated with the oozing of blood, and pain is caused to the patient.

Surgical Cotton.—This form of dressing is absolutely contraindicated in dressing raw surfaces or open wounds, especially when it is placed in direct contact with the wound. The cotton becomes saturated with the exudate from the wound and adheres to it, causing great discomfort to the patient at removal. The small cotton fibers become attached to the raw surface, remain in the wound and retard healing by their presence. The cotton dressing closely adhering to the wound acts as a seal, retains the discharge, favors bacterial growth and keeps the wound bathed in secretions.

Chamois Skin.—The best grade of chamois skin obtainable on the market was secured and sterilized by dry heating. The wounds to be experimented on were freed of all foreign bodies, cleansed with benzin, tincture of iodin was applied, the excess iodin was sponged off, a sterile piece of chamois skin was placed in direct contact with the wound and a sterile gauze bandage was applied. There were no decided advantages in the use of this material, and the disadvantages were many: the high market value of the chamois skin, and the fact that it is saturated quickly, allowing the excess secretions to bathe the wound, that it is impaired by sterilization, and that its life is good for only one dressing. It was easily removed in all cases.

Gutta Percha Tissue.—In a large majority of cases, gutta percha did not adhere to wounds or raw surfaces; but, owing to its impermeable qualities, the secretions were retained in wounds with extreme moisture present, and favored bacterial growth. In order to overcome this retaining feature, the gutta percha was perforated with small holes, one-eighth inch in diameter, and fluff dressing placed above the tissues. The end-results of this were favorable in a great majority of cases, the fluff dressing taking up the secretions and being easily removed. The perforated gutta percha was removed with a minimum of discomfort to the patient. One disadvantage was that the fluff gauze would adhere to the raw tissue under the perforations of the gutta percha, and cause oozing because of lacerations of the granulations.

Silver Foil.—This dressing has the same disadvantages as gutta percha. It seemed to have a germicidal effect on wounds, as very few cases developed sepsis. Perforated tin or silver foil gave no beneficial results over gutta percha.

Paraffin or Oiled Paper.—The stiffness and texture of such dressings when applied to sensitive raw wounds caused great discomfort to patients. It gave practically the same results as gutta percha.

Rubber Dam (Dental).—Unperforated rubber dam was useless, and when perforated it gave no advantages over gutta percha.

Narrow Mesh Fine Silver Wire Screen.—This was used in a number of cases, and a fluff dressing placed over it; but, owing to pain in its application to the wound, and to the discomfort experienced by the patient while it was in place, it had no decided advantage.

Medicated Gauze Dressing.—Regardless of the ingredients used to medicate the gauze when placed in contact with the raw surfaces and allowed to remain for any length of time, the dressing was found to adhere when attempts at removal were made. Narrow mesh gauze medicated with iodoform has less adhering qualities in the dry state than any other form used; but, owing to its disagreeable odor, it was abandoned. Wet medicated gauze dressings had less adhering qualities, but the part was macerated and the wound kept moist. When allowed to dry, these dressings all adhered.

Gauze impregnated with oily ingredients, such as balsam of Peru, etc., did not adhere, but the ingredients were quickly absorbed if the dressing was left in situ for any length of time, with the result that the dressings became attached to the wound.

Petrolatum impregnated gauze adheres more quickly than a gauze impregnated with a heavier cerate, owing to the fact that the lighter petrolatum is quickly absorbed by the tissue, and the cerate from cerate impregnated gauze is absorbed more slowly. The main disadvantage was from the constant wet condition of the wound, the absorbing quality of the gauze being lessened, owing to the impregnating medicine.

Cold Cream.—It was found that gauze impregnated with a pure, high grade facial cold cream gave very beneficial results, and adhering was less than when other greasy or oily ingredients were used.

Powder Dressing.—Powder (medicated) in any form, while causing a drying up of the wound secretions and adhering less, was difficult to remove from the wound. Owing to its crusting in the wound, it made a seal for infection to develop in the retained secretions.

PARAFFIN IMPREGNATED GAUZE

This embodies all the advantages of most of the dressings mentioned above, and has very few, if any, disadvantages. The gauze used is a medium sized meshed material impregnated with boiling paraffin and white petrolatum, and allowed to dry while being constantly agitated so as to free the apertures between the meshes of excess paraffin. When dried, the gauze is very flexible and presents a waxed screen, which is placed in contact with the wound. Fluff dressing is placed above it. The dressing when removed is found to contain the secretions from the wound, leaving the raw wound surface practically dry. When the paraffin gauze screen is exposed, it is found in close contact with the raw surface. On attempt at removal it separates very easily from the wound with almost no pain and no injury to the little granulations that have

formed since the dressing was applied. The paraffin is not absorbed by the tissues. The granulations do not cling or become attached to the wax surface of the gauze, and no bleeding is present. The petrolatum, owing to its oily nature, seems to make the gauze more flexible, as it retards the hardening feature of the paraffin. The overlying fluff gauze has very little opportunity of adhering to the granulations in the aperture of the paraffin screen, owing to the minimum amount of surface presented. The paraffin gauze allows free drainage of the wound into the fluff gauze by capillary attraction, so that a dry wound is usually found. It can be resterilized as frequently as desired by immersion in absolute grain alcohol.

The results of use of the paraffin impregnated gauze in the medical department of the elevated railroads of Chicago have been gratifying, and it is in daily use in the treatment of all classes and conditions of wounds, such as clean septic wounds, abrasions, burns, and in applications over suture lines in operations. At present quite a number of physicians are cooperating with me in testing out this gauze in their practice, and full detailed reports of their results are being obtained.

PREPARATION OF NONADHERING SURGICAL DRESSING

The purest grade of paraffin wax is brought to a temperature of 450 degrees F. by electric heat in a porcelain lined vessel. White petrolatum or lanolin (wool fat) is added in the proportions of 8 parts of paraffin to 2 of petrolatum or lanolin. This mixture is allowed to dissolve and boil for ten minutes, when it is ready for the gauze.

White gauze of either wide or narrow mesh, cut in strips of 8 by 24, is given two separate sterilizations of one hour each in an electric, dry, hot air sterilizer at a temperature of 300 F.

The gauze is then immersed in the paraffin solution and allowed to remain for ten minutes in order that the gauze fibers may be thoroughly saturated. The gauze is gradually removed from the solution and is stretched, and a current of filtered air is directed against the gauze to free the apertures of excess paraffin.

The gauze is allowed to dry, and then presents a waxed screen which is flexible according to the amount or proportions of petrolatum used with the paraffin.

The dried wax gauze is cut and packed in bulk in sterile glass containers, and sealed so as to exclude air and dust. When needed for the treatment of wounds at the surgeon's hands, the jar of gauze is opened and the necessary amount to be used is placed in direct contact with the wound or raw surface, one or two layers of nonadhering gauze placed on the wound, and ordinary surgical gauze placed above the waxed screen. The gauze can be changed as frequently as desired, and the wax screen can be left on for a more lengthy interval.

Paraffin-Stearic Acid Dressing.—A second formula for the nonadhering surgical gauze, which permits of greater length of time in contact with raw surfaces without sticking, is the paraffin-stearic acid impregnated gauze. In the preparation of this dressing, paraffin wax is brought to the boiling point at three different intervals in the course of one hour and filtered through a narrow mesh gauze in lieu of filter paper. The purpose of this frequent boiling and filtration is to bring it to a sterile state and free it from any foreign bodies like minute particles of grit, etc.

During this procedure, the stearin (stearic acid) is brought to the boiling point and filtered by the same process for the same number of times.

Then equal portions of the liquid hot paraffin and liquid hot stearic acid are poured into a white porcelain container and again brought to the boiling point and filtered as described above. The mixture is then ready for the sterile wide mesh gauze, which is immersed in it for ten minutes to allow the gauze to become thoroughly impregnated with the fluid. The wet gauze is then removed and stretched, and the excess mixture allowed to drain off. A jet of filtered and heated air is directed against the gauze, causing the film of wax over the meshes to melt and allowing a more uniform waxed screen. When dried, the gauze is placed in a sterile container and sealed.

The paraffin-stearic acid gauze dressing gives the added advantage over the paraffin-petrolatum gauze that it can remain a longer time on the wound without any adherence whatever. The flexibility is greater; the fibers have an additional coating of nonagglutinating substance. Wounds treated with this gauze are shed readily from the gauze when the healing process is complete.

ADVANTAGES

Some of the advantages of the nonadhering surgical dressing are as follows:

1. It does not become matted with secretions and débris from the wound, owing to its waxed fibers.
2. The paraffin is not absorbed by the tissue.
3. The granulations of tissue repair do not cling or adhere to the waxed gauze, as is the case with all other surgical gauze used.
4. The nonadhering gauze will not adhere to wounds when left on for any great length of time.
5. It stimulates tissue growth.
6. Because of the flexibility of the nonadhering gauze, it closely conforms to the surface to which it is applied.
7. It causes no pain to the patient at the time of application or while it is in place on the wound.
8. No pain or discomfort is caused the patient when it is removed from the wound.
9. Owing to its being a dry dressing and free from matting, it permits of adequate drainage of wound secretions.
10. It is easily and quickly sterilized by immersion in absolute grain alcohol for days without impairing its usefulness.
11. Two years' treatment of wounds of all varieties has shown its decided advantages over all other dressings in use.
12. There is freedom from infections during its use.
13. When allowed to remain on indefinitely, it becomes separated of itself, leaving the healthy, healed wound underneath.
14. By these advantages it hastens the convalescence or healing of wounds.
15. Application to clean surgical operations on the line of suture prevents adherence of the ordinary gauze dressing.
16. It is of value in covering skin graft cases, as it permits freedom of drainage.

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DIPHTHERIA IN MANILA

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During the last of September and first of October, 1915, six patients with diphtheria were admitted to San Lazaro Hospital, with five deaths. All of these patients except the one who recovered had been sick for a week or more on admission, and all of the deaths were due to toxemia, nephritis, bronchopneumonia or some other complication.

It has been known practically since American occupation that diphtheria existed in the islands, but this little outbreak showed more cases than usual for a given period, and also, from the high mortality, a greater virulence.

The delay in getting these patients to the hospital was due, in great part, to the ignorance of the relatives or friends of the patients as to the true nature of the disease, as they thought it was simply a sore throat, or "angina," until the condition became serious.

In view of the foregoing facts, and as diphtheria has undoubtedly gradually increased in Manila during the past few years, it was thought best to take somewhat extraordinary preventive measures. Another strong factor in influencing the director and other officials of the Philippine Health Service toward taking these measures was the fact that diphtheria antitoxin was very scarce at this time, there being on hand enough for only a very few severe cases.

It was therefore decided to take specimens from the throats of schoolchildren in Manila, and from all persons in any way contacts of positive cases. It has for years been the rule to take specimens from all direct contacts, but at this time it was thought necessary to carry out operations on a more extensive scale, and in a more thorough manner. Accordingly, during the months of October and November more than 7,000 throat specimens were taken, and of these more than 600, or about 9 per cent., were found positive for diphtheria by the Bureau of Science.

The greatest number of carriers admitted to San Lazaro Hospital on any one day was 130, October 15, and the greatest number in hospital at any one time was 246, October 21. Two consecutive negatives on different dates were required for discharge, and the longest time any carrier was held was seventeen days, although on a former occasion one was held as long as forty days. Of the number of carriers mentioned, more than twenty, or about 4 per cent., developed symptoms of diphtheria—fever, sore throat, etc.—after entering the hospital, and received serum, the average dose for these being a little less than 3,000 units. It is believed that most of these cases which developed from carriers would have become quite severe without the early use of serum, and that several of the patients would undoubtedly have died; besides this direct saving of life it is very probable, in fact almost beyond doubt, that the preventive measures taken against diphtheria saved Manila from a more or less severe epidemic.

Diphtheria among both Americans and Filipinos is well known in Manila and the islands, and does not differ essentially from the disease as found in the United States. Antitoxin is always used freely, and almost invariably with success when the patients are brought to the hospital in fair season. One good effect of the publicity given to the antidiphtheria measures taken by the Philippine Health Service, through the great number of people examined, has been the voluntary presentation at the hospital, both from the city and from the provinces, of numerous patients in the early stages, who have all recovered. Manila is at present practically free from diphtheria; there is only one mild case in the hospital and there are no carriers.

All classes of Americans and Filipinos were among those quarantined, and the enforced imprisonment was, as a rule, undergone with patience and equanimity.

STUDIES ON DIPHTHERIA

II. THE TREATMENT OF DIPHTHERIA CARRIERS BY TONSILLECTOMY *

H. O. RUH, M.D.,
M. J. MILLER, M.D.
AND
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In another paper[1] we have given our views on some of the phases of the carrier problem in diphtheria, and have called special attention to our definition of a "carrier" and to our tentative classification of the various forms of *Bacillus diphtheriae*. For better understanding of the following remarks we may again state our definition of a true carrier, namely, that such a person in order to become a true carrier must harbor *virulent* diphtheria bacilli (in or upon the tissues) for a period of twenty-one days or more.

In the endeavor to get rid of these menaces to the health of the community, a great variety of measures have been attempted. We have tested out to our own satisfaction many of the measures advised, but have not found them worthy of routine procedure.

The methods of treatment for freeing carriers of the organisms may be divided into three classes:

1. BIOLOGIC PRODUCTS

Various biologic products have been used in numerous series of cases with indifferent results. The diphtheria antitoxin of course should not be considered, as it has no effect on the organism. It might be noted in passing that it is remarkable how long the idea obtains in the minds of many physicians that antitoxins can in some way affect *Bacillus diphtheriae* in the body. Toxin-antitoxin mixtures are also useless.

Petruschky[2] seems to have been the first to use a vaccine. His results, while suggestive, are far from conclusive, and further work along this line must be done before discarding his method.

Hewlett and Nankivell[3] were the first to use a "vaccine" having as its active principle the "endotoxin." They prepared their vaccine from *Bacillus diphtheriae* by using a modification of the Macfadyen-Rowland method. Their results seem to give more promise than those of Petruschky. In a personal communication Dr. Hewlett states that he is quite certain of the efficacy of the treatment, and only awaits the opportunity for a more extended trial with the "endotoxin."

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* From the Department of Hygiene, Western Reserve Medical School, the Bacteriological Laboratory of the Division of Health, and the Contagious Department of the Cleveland City Hospital.

1. Ruh, H. O.; Miller, M. J., and Perkins, R. G.: Jour. Infect. Diseases, to be published.
2. Petruschky: Arb. a. d. path. Inst. zu Tübingen, 1908, vi, Pt. ii, p. 331.
3. Hewlett and Nankivell: Lancet, London, July 20, 1912, p. 143. Hewlett: Ibid., June 28, 1913.

The antibacillary serum prepared by L. Martin and Wassermann[4] and that prepared by the Lister Institute have not proved of value.

Opsonins, which were demonstrated in diphtheria patients by Tunnicliff,[5] have not been found to be of practical value in the treatment of the carrier.

Attempts to substitute some nonpathogenic or pathogenic organism for *Bacillus diphtheriae* by direct local inoculation seemed for a short time to have solved the problem, and many successful results have been claimed after inoculation of various organisms. Among these may be noted *Staphylococcus pyogenes aureus, Bacillus bulgaricus,* lactic acid organisms of various types, yeast, and even some of the higher molds. These have been tried in our series, but with no such success as to warrant continuance.

We have come to the conclusion that the use of a series of unselected cases involves the error due to the lack of certainty as to the time in which the organisms will disappear. Cultures showing a great majority of diphtheria forms on one day will suddenly show progressive diminution with the development of negative cultures in three or four days, while others will persist with morphologic changes and slow disappearance.

Nine children who had resisted local treatment for almost three months were treated three times a day for three weeks with an emulsion of a twenty-four hour milk culture of a *Bacillus bulgaricus* strain giving 2.6 acid. There was no apparent decrease in the number of diphtheria organisms. A mixture of several strains of *Staphylococcus lacticus* of Esten type, grown in lactose agar, washed off in normal saline, was then applied as a spray for four weeks with no result. Previous work in routine cases of less obstinate carrier propensities had been done with similar results. We noted that, while there might be at times a diminution and even a disappearance of the diphtheria organisms, cessation of the treatment for a few days always resulted in the reappearance of the organisms, and we believe that the great majority of successful cases obtained by these methods are either those in which organisms were about to disappear, or in which later cultures would have shown that they were merely temporarily overridden.

4. Wassermann: Ztschr. f. Hyg., 1895, xix, 408.
5. Tunnicliff: Jour. Infect. Dis., 1908, v, 14.

2. CHEMICAL SUBSTANCES

Direct local treatment by chemical substances has been a failure in the hands of the great majority of men. In a limited number of cases there have been apparently successful results, but the number is not such as to show that these cases would not have become free from the organisms without treatment. Indeed, as a result of our own observations and in agreement with those of Park and others, we are inclined to believe that undue handling of the mucosa in the nose and throat tends to stimulate the persistence of the organisms rather than their disappearance.

Among the medicaments employed with occasional successful results there may be mentioned: phenol (carbolic acid), iodin, alcohol, potassium chlorate, chromic acid and liquor formaldehydi. The latest substance to be recommended is kaolin. Hektoen and Rappaport[6] concluded that on account of the great adsorptive power of this substance its use in the treatment of diphtheria carriers should be of great benefit. They state that in cases in which it was properly applied, it removed *Bacillus diphtheriae* in three or four days. Our own results with this method of treatment have not been so successful. With diphtheria infection in the tonsils it has so far been without effect. It may be that with an improvement in our technic of application better results may be obtained.

RESULTS IN THE TREATMENT OF DIPHTHERIA CARRIERS BY TONSILLECTOMY

Case Number	Date Patient Entered Hospital	Cultures from Tonsil Crypts	Cultures from Tonsils on 21st Day	Day of Disease on Which Tonsillectomy Was Performed	Position from Which Cultures Were Taken after Tonsillectomy			Negative Cultures			Day of Discharge after Operation
					Surface	In Substance	Crypts	1st	2d	3d	
1	1/ 6/15	+	+	31	..	..	+	10	11	..	11
2	1/ 7/15	+	+	21	..	..	+	6	7	..	7
3	2/ 3/15	+	+	21	+	..	+	9	10	..	10
4	2/11/15	+	+	25	..	..	+	11	12	..	12
5	5/ 2/15	+	+	40	..	+	+	7	8	..	8
6	5/11/15	+	+	24	..	..	+	10	11	..	11
7	6/ 7/15	+	+	40	+	..	+	17	18	19	19
8	8/21/15	+	+	120	—	..	+	14	15	..	15
9	10/15/15	+	+	21	..	..	+	3	4	..	4
10	11/ 1/15	+	+	21	+	+	+	4	5	..	5
11	11/ 1/15	+	+	22	+	+	+	8	9	..	9
12	11/22/15	+	+	40	—	..	+	6	7	..	7
13	11/23/15	+	+	21	—	..	+	3	4	5	4
14	12/ 6/15	+	+	31	..	..	+	6	7	..	7
15	12/18/15	+	+	34	..	+	+	9	10	..	10
16	12/25/15	+	+	21	+	..	+	3	4	5	4
17	1/ 5/16	+	+	25	+	+	+	3	4	5	4
18	12/ 2/15	+	+	40	—	..	+	4	5	..	5
19	12/30/15	+	+	36	—	+	+	3	4	..	4
Averages.....	.....	..	..	31+	..	..	..	7+	8+	..	8+

3. MECHANICAL METHODS

It has been our custom at the contagious department of the Cleveland City Hospital to select a certain proportion of diphtheria carriers, when the organism is found in the tonsils, for treatment by the mechanical method of tonsillectomy and adenoidectomy. Although nothing new or original is claimed for this method, we believe that by a comparison with other methods of treatment some conclusions can be reached which are not possible in other and less extensive series of cases. On careful comparison we have come to the conclusion that at present the quarantine period can be shortened considerably. Nineteen cases in all have been selected for operation. It will be noted in the accompanying table that all of these patients carried the infection in the crypts, while cultures in some cases (Cases 8, 12,

6. Hektoen, L., and Rappaport, B.: The Use of Kaolin to Remove Bacteria from the Throat and Nose, THE JOURNAL A. M. A., June 12, 1915, p. 1985.

13, 18 and 19) were negative on the surface of the tonsil even when made after excision of the tonsil. In all cases the cultures from the crypts after excision showed *Bacillus diphtheriae* in a nearly pure culture. It may be noted in passing that there is a frequent source of error in taking release cultures if the swab is not passed into the crypts and as nearly as possible to the bottom.

As might be expected, we have never experienced any adverse results from operating on a throat in which virulent organisms were present. An antitoxic immunity to *Bacillus diphtheriae* is already present, and if there should be any doubt as to its presence, an intradermal toxin test (Schick's test) could be made.

The reaction to the trauma of the operation is in no way more severe than in the ordinary operation. We have found that the disappearance of the organisms coincides very closely with the disappearance of the pseudomembrane which forms after the operation. Negative cultures are seldom obtained until all of the exudate formed after the tonsillectomy has disappeared.

The table is self-explanatory. Cultures are taken by routine, each day after the operation, from the nose, throat and posterior pharynx. In a few cases a single negative culture was obtained earlier than stated in the table, but when this was followed by a positive, we have considered it due to some slip in technic in making the culture. We have considered the first negative beyond question only when those taken on the following day have shown the same morphology. This explains the fact that in the table the first and second negative cultures are always on successive days without any intervening positive cultures.

It will be noticed from the table that the average duration of the carrier state in these selected cases was thirty-one days. The average day of release from quarantine after the tonsillectomy was eight plus.

In comparing these results with others and with our own results by other methods of treatment of carriers, we feel that at the present time this method of treatment offers to the patient a quicker release from quarantine, and to the public a greater assurance that the patient is no longer dangerous, than any other method of treatment.

NOTE.—In a recent article, Ott and Roy[7] suggest the value of iodized phenol with carriers. A careful examination of the article, however, leaves a less satisfactory impression. Of the seventeen cases noted, two of the most important, admitted as carriers, were not followed and must therefore be excluded. In all the other cases, both positive and negative cultures had been obtained previous to treatment, and yet in every case one final culture two or three weeks after discharge is taken as diagnostic of cure. In our own experience, after a patient is a chronic carrier, the absence of organisms in a single isolated instance is of little value, and where we noted, as they have in several of their cases, that the tonsils were enlarged, we were always able to get positive cultures from the crypts. We cannot feel, therefore, that there was any adequate evidence that this method of clearing up carriers is better than any of the other chemical means already reported.

7. Ott, W. O., and Roy, K. A.: The Treatment of Diphtheria Carriers with Iodized Phenol, THE JOURNAL A. M. A., March 11, 1916, p. 800.

Sleep.—Sleep is Nature's great rejuvenator, and the health seeker should avail himself of it to the full. Our sleep should not only be sufficient in duration, but also in intensity, and should be regular.—Fisher and Fisk, How to Live.

THE USE OF KAOLIN TO REMOVE DIPHTHERIA BACILLI FROM THE NOSE AND THROAT

FURTHER OBSERVATIONS *

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In a preliminary note,[1] the use of kaolin to remove bacteria from the nose and throat was suggested on the basis that kaolin by means of its adsorptive property would carry with it bacteria with which it came in contact. Since this report, a study has been made of this method in 100 unselected cases, ninety-six being diphtheria patients and four pure diphtheria carriers. By "pure diphtheria carriers" is meant a person with diphtheria bacilli in the nose or throat, who yields no history of sore throat or other symptom of diphtheria, and who gives a negative Schick test.

The method of the application of kaolin is as follows: As crude kaolin, which is moist and lumpy, has not the adsorptive power of the thoroughly dried and finely powdered product, the crude material is first thoroughly dried for several days in a bacteriologic incubator. The lumps are then broken up and the powder passed through a fine flour sieve. This stock is kept in the incubator, and each morning the small amount necessary for the day's treatment is taken to the patient's room. On damp days it is necessary, for best results, to take kaolin from the incubator oftener —two or three times during the day. The point of this is that kaolin must be perfectly dry and finely powdered when applied, else the results will be disappointing.

Whenever possible, the application of kaolin should be started as soon as the acute symptoms have subsided. The kaolin must be distributed thoroughly over the surface to be treated. When the mucous membranes are normal, this is attained more easily than when there is some pathologic condition present, such as enlarged tonsils, adenoids, or nasal disease and obstruction; here the thorough application of kaolin to the involved surface is difficult and often impossible. In small children—of less than 3 years of age—kaolin is best applied directly to the nasal mucous membrane, even when the bacilli are in the pharynx, as the powder works its way through the nasopharynx into the throat. The powder is blown into the nose by means of a rubber bulb attached to a glass tube with a tapering end that fits the nostril. Six treatments at two-hour intervals during the day is the practice, as a rule. To a large extent the powder remains in the nose, holding the organisms it has already taken up and preventing the kaolin of the next treatment from reaching the mucous surface; hence it is necessary at each treatment to remove the old kaolin before more is introduced. For this purpose a mild alkaline spray does very well, such as a solution of sodium bicarbonate and sodium biborate, 2 per cent. each.

In the case of older persons, the powder is best applied to the pharynx by having the patient swallow it. Four half-teaspoonful doses at two-hour intervals, six times during the day, are given as a rule. The kaolin remains in the mouth and pharynx for some minutes, a sufficient time for it to take up the organisms with which it comes in contact.

* From the Memorial Institute for Infectious Diseases.

1. Hektoen, L., and Rappaport, B.: The Use of Kaolin to Remove Bacteria from the Throat and Nose, THE JOURNAL A. M. A., June 12, 1915, p. 1985.

Apparently, it is not necessary to give kaolin as often or in such large amounts as was at first suggested. In the test tube, kaolin mixed with a suspension of bacteria, after an interval of five minutes, shows on the surface of each of its particles as many bacteria as after an interval of one or two hours. It seems, therefore, that kaolin takes up rather quickly the organisms with which it comes in contact.

Kaolin is not bactericidal, for fluid cultures of streptococci or diphtheria bacilli mixed with an abundance of kaolin give as good a growth as without the admixture of kaolin; neither does it protect guinea-pigs inoculated with virulent diphtheria bacilli. Hence its action in removing bacteria from mucous surfaces would seem to be wholly mechanical.

Before dismissal of any patient as free from bacilli, the cultures from nose and throat must be negative for at least three consecutive days after the discontinuation of the kaolin treatment, which is continued for from two to five days after the first diphtheria-free culture.

The main results of this treatment, indicated by the length of stay in hospital, are shown in Table 1, which

TABLE 1.—LENGTH OF STAY IN HOSPITAL OF 100 PATIENTS TREATED WITH KAOLIN, AND OF 100 PATIENTS UNTREATED

Length of Stay	Kaolin Patients		Untreated Patients	
	Number	Percentage	Number	Percentage
10 days	..	..	2	2
20 days	30	30	13	13 (15)
30 days	39	39 (69)	23	23 (38)
40 days	24	24 (93)	32	32 (70)
50 days	4	4 (97)	22	22 (92)
60 days	3	3 (100)	3	3 (99)
70 days	..	..	4	4 (99)
80 days	..	..	1	1 (100)
Average stay in hospital	25.61 days		33.45 days	

also gives for comparison the length of stay in hospital of the 100 consecutive patients dismissed preceding the routine use of kaolin. In this group, negative cultures on three successive days were required for the discharge of the patient.

The ages of the two groups of patients are given in Table 2.

TABLE 2.—AGES OF THE PATIENTS

	Under 5	From 5 to 10	From 10 to 20	Over 20
Kaolin patients	28	34	20	18
Untreated patients	28	22	23	27

The average stay in the hospital for each of the kaolin patients was 7.84 days less than that for the untreated patients—a shortening of 23.4 per cent. Not only was this a marked gain for the patients; it was also a great gain for the hospital, for the hospital had saved 784 days on the 100 patients treated with kaolin.

Of various factors which may influence the results of treatment with kaolin, the only one of importance seems to be the location of the bacilli. In the present series, the nose was freed of diphtheria bacilli in half the time needed to free the throat. Much depends on whether the bacilli are superficial or lodged deep in some crypt. Table 3 gives the average duration of treatment according to the location of the bacilli.

In 20 per cent. of the patients receiving nasal insufflations of kaolin, the nasal cultures became sterile, usually in from three to five days. Although in the pharynx, the tonsillar crypts, pillars, and other folds and irregularities afford excellent hiding places for the bacteria, rendering their removal more difficult, the larger number of this series became free of diphtheria bacilli in from two to four weeks of treatment with kaolin. In six of the cases the bacilli were not removed in a considerably longer time (Table 1); in these the tonsils were diseased, not necessarily much enlarged, but with many crypts and irregularities, and there were in some cases, adenoids. After removal of tonsils and adenoids in these six cases by Dr. Friedberg,[2] five became negative immediately, as shown by negative cultures for several days afterward, and the sixth patient was freed permanently three days after the operation. Microscopic sections of tonsils in these cases showed diphtheria bacilli in superficial ulcers located usually in crypts.

TABLE 3.—NUMBER OF DAYS OF KAOLIN TREATMENT BEFORE FIRST PERMANENTLY NEGATIVE CULTURE WAS SECURED

Kind of Cases	Number of Cases	Number of Days of Kaolin Treatment	Remarks
Nasal diphtheria	15	6.4	Average in 96 cases of diphtheria, 11.9 days
Pharyngeal diphtheria	41	12.8	
Nasal and pharyngeal diphtheria	40	13.1	
Nasal carrier	1	5	
Pharyngeal carrier	1	39	Tonsillectomy
Nasal and pharyngeal carriers	2	8	

One carrier is of special interest. Diphtheria bacilli had been present in the nose for two months before admission. From the right nostril some mucopurulent discharge escaped. After eight days' application of kaolin with no improvement, examination revealed a shoe button rather firmly embedded high in the right nostril. Two days after the removal of the button the nose was permanently free from bacilli that a few days before had been virulent for guinea-pigs. The button evidently had favored the persistence of the bacilli, most likely by protecting them from being taken up by kaolin.

On comparing the figures obtained from analysis of the 100 kaolin cases with the figures given by Nuttall and Graham-Smith, I find that the results favor the use of kaolin. Of the kaolin cases, 21 per cent., as compared with 11.8 per cent., were freed of diphtheria bacilli within ten days (Table 4); 59 per cent., as compared with 31.6 per cent., within 20 days; and 90 per cent., as compared with 51.4 per cent., within 30 days. After thirty days the difference is also in favor of kaolin, but not so markedly.

TABLE 4.—COMPARISON OF THE TIME REQUIRED FOR DISAPPEARANCE OF DIPHTHERIA BACILLI IN 100 KAOLIN CASES WITH THAT REQUIRED IN GROUPS OF CASES OF SPONTANEOUS DISAPPEARANCE

Time Required for Disappearance (from Onset to First Permanently Negative Culture)	100 Kaolin Cases Per Cent.	Nuttall and Graham-Smith* (from Different Sources) Per Cent.
Within 10 days	21	11.8
Within 14 days	..	....
Within 20 days	59	31.6
Within 21 days	..	....
Within 25 days	..	....
Within 28 days	..	....
Within 30 days	90	51.4
Within 35 days	..	....
Within 40 days	95	67.7
Within 50 days	99	78.9
Within 60 days	100	86.1
Within 63 days	..	....
Within 80 days	..	93.7
Within 100 days	..	97.1
Within 200 days	..	99.62

* Nuttall, G. H. F., and Graham-Smith, G. S.: Bacteriology of Diphtheria, New York, G. P. Putnam's Sons, 1908, p. 420.

2. Friedberg, S. A.: Removal of Tonsils and Adenoids in Diphtheria Carriers, THE JOURNAL A. M. A., March 11, 1916, p. 810.

Patients with scarlet fever often have a persistent nasal discharge, and an attempt was made to stop this discharge by means of kaolin. By plating and roughly estimating the number of bacteria, I found that kaolin did not lessen the number of organisms to any marked extent, although a purulent secretion changed to a serous one promptly. Evidently the bacteria here are not so superficially placed as in diphtheria, or possibly they come from sinuses out of reach of the kaolin.

It would be of interest to study the effect of kaolin on meningococcus carriers.

CONCLUSIONS

When properly applied, kaolin by its adsorptive power mechanically removes bacteria with which it comes in contact, and its application to the nose and throat helps to remove diphtheria bacilli and to shorten the period of quarantine after diphtheria. This action of kaolin is interfered with by various local pathologic conditions, which must be remedied as promptly as possible. Removal of tonsils and adenoids is indicated when diphtheria bacilli persist unduly in spite of kaolin.

VACCINES OF FAVUS AND RINGWORM

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Several articles have recently appeared regarding the therapeutic use of vaccines of favus and ringworm. Infections of the nails and scalp by these fungi cause conditions which are very resistant to any form of treatment. Many of the reports on the use of these vaccines have been quite favorable. In the immigration hospitals at Ellis Island we see many cases of this kind. These hospitals are primarily diagnostic and only secondarily and relatively rarely therapeutic, especially in diseases which do not prevent prompt deportation of the sufferer. The promise of early and successful results from vaccine therapy, however, has made the subject worthy of our consideration.

These vaccines are more difficult to prepare than the usual bacterial vaccines, largely because of the slow growth of the organisms and the difficulty of getting them into a finely divided state for administration. Most workers seem to grow them on solid mediums (French proof agar), scrape off the growth and rub it up in various ways. Strickler[1] suggests rubbing up with crystals of sodium chlorid and then adding sufficient distilled water to make the proper solution. Another difficulty with these vaccines is standardization of the dose. The organisms cannot be counted and handled as bacteria are, and some other method must be adopted.

After some experimentation we have tried a method somewhat different from the one usually recommended. The organisms are grown in liquid medium, which is Sabouraud's proof medium, about the same as French proof agar without the agar. Sabouraud's formula[2] is:

Crude maltose (Chanut)	4 gm.
Granulated peptone (Chassaing)	0.75 to 1 gm.
Distilled water	100 gm.

This is the formula we have used, substituting, however, chemically pure maltose, Witte's peptone and tap water. The finished product is acid in reaction and titrates from 0.5 to 1 acid to phenolphthalein. This reaction is not modified. The medium is put up in flasks of about 100 to 150 c.c. capacity, with about 50 c.c. to the flask, and sterilized in the usual manner for sugar medium. The organisms are isolated on large plates of Sabouraud's glycerin agar,[3] and subcultured on large tube slants of the same material. From these slants the flasks of liquid medium are sown, care being taken to plant a number of small pieces rather than one or two large ones, the growth being well broken up by the needle before transference.

As a rule the organisms do not grow well at incubator temperature, and we are accustomed to place the flasks on top of a small incubator. Within ten days or two weeks there is ordinarily sufficient growth for the preparation of vaccines.

Under sterile conditions, the contents of the flasks are then poured into a filter paper on a funnel, the gelatinous growth is washed once or twice with salt solution, and when fairly dry is transferred from the filter to a glass dish, dried in the incubator, weighed and rubbed up in a mortar with crystals of salt, sufficient distilled water being finally added to make the proper solution. Compound solution of cresol or tricresol is then added, the vaccine sterilized by heat, and cultured on Sabouraud's glycerin agar for sterility. The growth may be rubbed up without drying either with salt crystals or with sterile broken glass, but it does not rub up so readily. If dried, care should be taken so to arrange the material in the glass dish as to permit its fairly ready removal. If smeared out in thin layers, it is sometimes difficult to remove. A piece of platinum foil, if available, offers advantages over the glass dish.

After completion it is placed in a well stoppered bottle and set in the ice chest. While the result of the sterility test is being awaited, it is shaken daily Finally, when proved sterile, it is thoroughly shaken, left to stand a few minutes till the heavier particles settle, and the supernatant cloudy fluid is poured off, placed in proper containers, labeled and dispensed to the wards for use. The heavier particles may also be thrown out by using the centrifuge at a low speed for a brief time.

This method is, of course, more applicable to stock vaccines. Autogenous vaccines may be used, but much time is thus consumed. Most workers seem to have made use of stock vaccines containing three or four strains. With some experience, however, the foregoing process can be shortened at several stages.

One advantage of drying the growth is that by weighing, more accurate dosage is insured. We have found our flasks in about two weeks to yield something like 100 mg. each of dry material, but there is much variation. The vaccines have been put up with 10 mg. of the dry material to each cubic centimeter. The initial dose is 3 or 4 mg. We have given as much as 30 mg. at a dose or even more. General reactions have not often been observed. The local reactions consist in a sluggish swelling which very

1. Strickler, Albert: The Vaccine Treatment of Ringworm of the Scalp, THE JOURNAL A. M. A., July 17, 1915, p. 224.
2. Besson, A.: Practical Bacteriology, Microbiology and Serum Therapy, New York, 1913; Translated by Hutchens.

3. This is composed of:

Granulated peptone	2 gm.
Pure anhydrous glycerin	4 gm.
Agar	1.5 gm.
Water	100 c.c.

If 2 per cent. of agar is added, the medium is firmer.

slowly disappears. Some authors have described a prompt local reaction in the lesions — a focal reaction — but we have not observed such here. Even when consideration is given to the fact that if heavy particles are allowed to settle not all of the dried material is used in the vaccine, it is still obvious that one can administer much larger doses of these vaccines than of bacterial vaccines.

This note is concerned solely with the preparation of the vaccine itself and its method of use. Our therapeutic experience has been too limited as yet for us to judge results. But up to date our results have certainly not been brilliant.

CHAPARRO AMARGOSA IN THE TREATMENT OF AMEBIC DYSENTERY

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In former reports[1] I outlined the treatment of twelve cases of amebic dysentery by the use of chaparro amargosa. As reported in a footnote,[2] there was a recurrence in Case 9, and the patient has continued to have trouble from time to time. This patient, I believe, has not been sufficiently treated; I have communicated with him by mail, and find that he keeps a supply of chaparro amargosa on hand, and when his trouble begins he treats himself, leaving off the treatment when his symptoms have subsided. So far as can be determined, all the other patients, including the patient in Case 10, have remained well for from two to four years.

Other patients have been treated, and the results have been no less satisfactory. The present brief report has to do with the results obtained in a single case; it seems worth while to put this case on record in that emetin (alkaloid) administered hypodermically every day for five months had not altered the course of the disease. The emetin used was obtained from several different sources, and was prepared by two or three drug firms, so that its potency can be taken for granted. The effect of chaparro amargosa in this case was not so immediate or so magical as that brought about in most of the other cases, but the improvement has been sufficiently rapid to justify the belief that the excessively chronic and obdurate cases of amebic dysentery can be controlled by the use of chaparro amargosa.

REPORT OF CASE

History.—W. D., an unmarried man of 56 of previous good health, developed diarrhea in April, 1914, eighteen months before he was seen. A few weeks later dysentery with the passage of a great deal of blood and mucus began. The frequency of the bowel movements has varied from five to thirty times in twenty-four hours, and at no time since the onset have the bowels moved less than five times. Abdominal pain, tenesmus, vomiting, slight fever, weakness and general malaise have been accompanying symptoms. The appetite has been fair at times and again it has been very poor. The patient's weight has decreased from 205 to 148.

During the first year, various remedies were used. In March, 1915, emetin was begun and was given hypodermically in one-half grain doses every day till the latter part of July. From August 1 to October 1 other drugs, including quinin by rectum, were tried. From October 1 to November 10, emetin was again used, 1 grain being given every other day. The patient came to me Nov. 11, 1915, the day after his last dose of emetin. At that time the bowels were moving from fifteen to twenty times a day.

Physical Examination.—The loss of weight was obvious. The skin was flabby and the mucous membranes pale. General examination was negative. In the left iliac fossa the sigmoid was palpable as a tender elongated mass. A stool passed in the office was practically pure mucus and blood, and contained many active organisms of *Endamoeba histolytica* and *Cercomonas intestinalis.* A striking characteristic of the stool was the extreme tenacity of the mucus; it was possible to raise the entire stool on an ordinary toothpick.

Treatment and Course.—After a preliminary dose of Epsom salt, a glass of fresh infusion of chaparro amargosa was given by mouth four times a day and a quart of the same infusion was introduced into the rectum in the knee-chest posture once a day. For three or four days improvement was only slight. At this time I noticed under the microscope that all unattached amebas in a particle of stool, to which the infusion had been added, were killed, while those embedded in the tenacious mucus were still active. With the idea of removing as much of this mucus as possible from the intestine, a preliminary rectal irrigation of sodium bicarbonate, 1 ounce to the quart, was used; after this was expelled the usual injection was made. Under this plan blood and mucus no longer passed, but the patient continued to have from three to five soft movements a day. Calomel, one-tenth grain, was given every hour for ten hours after the method of Freund, and continued for several days; the bowels moved from one to three times a day, assumed a semisolid consistency and no longer contained the cercomonas. At the end of ten days the patient felt quite well; his appetite was ravenous; he could eat anything; he was having from one to three semisolid bowel movements a day; he had gained 10 pounds in weight and had improved in every way. He was seen a month later and his improvement had continued, despite the development of a very large ischiorectal abscess; bowel movements were normal in frequency and consistency.

COMMENT

I appreciate that it would be easy to criticize the dosage and particularly the duration of emetin treatment in this case and to suggest that no conjunctive amebicidal irrigations were used. The fact apparently is that this case would not have responded to emetin if its administration had been differently carried out. Obstinate cases have been reported; for instance, Low[3] as late as November, 1915, wrote:

> Though practically all cases of amebic dysentery respond quickly to emetin treatment, there is a small residuum—in which there has been no doubt of the correctness of the diagnosis — which does not, symptoms continuing and amebas, vegetative and cystic, being still found in the stools. Such cases require further careful study to explain this anomaly.

No one who knows how prone this disease is to recur would be willing to contend that in the case here reported the patient is permanently cured. All that one can say is that he is clinically cured and that no amebas, vegetative or cystic, can be found in the stools.

My own experience with emetin has been quite limited; in no case of amebic dysentery have I felt the need of it. Chaparro amargosa, on the contrary, I have used repeatedly, and its effect has been unfailing. At the present time when the price of drugs is almost prohibitive and with prospects for still greater increases, it is pertinent to state that the supply of chaparro amargosa is well nigh inexhaustible.

205 Hicks Building.

1. Nixon, P. I.: Chaparro Amargosa in the Treatment of Amebic Dysentery, THE JOURNAL A. M. A., May 16, 1914, p. 1530; id., Am. Jour. Trop. Dis. and Prev. Med., 1915, ii, 572.
2. Nixon, P. I.: Chaparro Amargosa in the Treatment of Amebic Dysentery, Am. Jour., Trop. Dis. and Prev. Med., 1915, ii, 572.
3. Low, G. C.: The Treatment of Amebic Dysentery, Brit. Med. Jour., Nov. 13, 1915, p. 714.

FOOT-AND-MOUTH DISEASE IN MAN

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Although foot-and-mouth disease, or aphthae epizooticae, has been recognized in continental Europe for more than two centuries, it is only within the past few decades that the malady has attracted attention in this country. The disorder is an extremely infectious one. Clinically, it may be grouped with the acute exanthemas, although the eruption is seldom of generalized distribution. One attack confers only limited immunity, and the disease may recur within as short a period as ten or twelve days.[1]

The eruption is vesicular in character, and involves the mucous membranes as well as the skin. In cloven

Fig. 1.—Lesions of lips and conjunctivae on tenth day of disease.

footed animals, the mouth and the interdigital spaces are the regions commonly involved. The disease is more prevalent in summer than in winter. The causative agent has never been isolated, but very probably it is an ultramicroscopic micro-organism which is capable of passing through a Chamberland or Berkefeld filter (Loeffler and Frosch[2]; Nocard and Roaux[3]). The lymph contained in the vesicles is extremely virulent, and infection may result from direct contact with a wounded or otherwise pervious surface, or through the medium of contaminated food or bedding. According to Hutyra and Marek,[4] stock markets, through trading, play an especially important part in the transmission of the malady.

Of the various animals attacked, cattle are the most susceptible, then hogs, sheep and goats. Horses, dogs and cats occasionally contract the malady. Rarely, chickens, pigeons and other fowls are affected.[5]

In man the disease is usually acquired through the ingestion of contaminated milk or milk products (butter, cheese, whey, etc.). Direct inoculation is of infrequent occurrence. As encountered in man, the disease is of comparatively low virulence, although Bertarelli,[6] Schautyr[7] and others have succeeded in inoculating

Fig. 2.—Character and distribution of vesicular and pustular lesions on right hand.

animals with material secured from human subjects. As a rule, children are more severely affected than adults. In the majority of instances in man the disease takes a mild form, although fatal instances have been recorded as occurring in several of the German epidemics.[8]

The period of incubation varies from two days to two weeks. An attack is ushered in with manifestations of moderate constitutional disturbance. There may be an associated gastro-intestinal catarrh, particularly in children. Following the development of the fever and general malaise, the mouth becomes dry and

Fig. 3.—Character and distribution of lesions on left hand.

parched, and the mucous membrane swollen, reddened and glazed. In severe cases the palpebral conjunctiva, and the genital mucosa also may be involved. In the course of three or four days, superficial vesiculation

1. Kovacs and Mokaldy, cited by Hutyra and Marek (Footnote 4).
2. Loeffler and Frosch: Centralbl. f. Bakteriol., 1897, xxii, 256.
3. Nocard: Rev. gén. de méd. vet., Toulouse, 1903, i, 369.
4. Hutyra and Marek: Special Pathology and Therapeutics of the Diseases of Domestic Animals, Am. ed., i, 328; translated by Mohler and Eichhorn, Chicago, A. Eger, 1914 (a valuable presentation of the subject).
5. Spinola: Handbuch Speciellen Pathologie und Therapie für Thierarzte, 1858, ii, 883.
6. Bertarelli: Centralbl. f. Bakteriol., 1907, xlv, 628.
7. Schautyr: Arch. vet. naouk., 1893, ii, 87 (cited by Georges Hugot, Thèse de Lyon, 1913, who gives a fairly complete bibliography).
8. Siegel: Deutsch. med. Wchnschr., 1891, xvii, 1328.

occurs, discrete blisters from the size of a pinhead to that of a pea forming on the affected surfaces. In addition to the lesions on the mucous membranes, vesicles frequently appear on the dorsal surface of the hands and feet, and, occasionally, on the nose, face, ears, knees and buttocks. The bases of the majority of the lesions are ill defined and reddish or purplish. The distribution is roughly symmetric. At first the vesicles contain clear lymph, but later, as a result of pyogenic invasion, the fluid becomes yellowish and cloudy. In the course of a few days the pustules become inspissated, and finally disappear, leaving no trace. The description of the clinical picture has been admirably summarized by Clough[9]:

Fig. 4.—Character and distribution of lesions on feet and ankles.

A mild febrile infectious disease, characterized by the appearance of an erythema and a superficial vesicular eruption over the mucous membrane of the mouth and on the skin of the hands and feet; by salivation; by swelling, burning, and paresthesia of the affected parts, with subsequent desquamation; and by healing of the ulcers without scar formation.

The following case, clinically indistinguishable from foot-and-mouth disease in man, has recently been under our observation:

History.—A. J., man, white, married, aged 25, farmer and stockman, the cutaneous history of whose family was negative, had always been in good general health. Aside from the usual diseases of childhood he had never before experienced a serious illness. He resided on a farm, 2 miles south of Ellsworth, Kan. During the early fall of 1915 he was engaged in hauling and storing feed for his stock. About two weeks prior to the onset of the illness he had assisted in the transfer of small herds of cattle from one pasture to another. He had eaten a meal at a restaurant at that time.

The present illness began the night of Oct. 31, 1915, the attack being ushered in by sensations of chilliness, followed by fever, with slight sore throat, and pain in the muscles of the neck. The irritation in the throat was accompanied by a shallow, hacking cough, and increased activity of the salivary glands. The case was first seen by one of us (Dr. O'Donnell), November 4. At that time the patient appeared fairly well nourished, but ill and haggard. He had not slept for two nights on account of the pain in his throat and the profuse salivation, which compelled him to expectorate at intervals of from five to ten minutes. His temperature was 101 F., pulse 118, respiration 20. The cough was troublesome, and swallowing was difficult and painful. The cervical lymph-nodes were enlarged and tender. The tonsils were swollen and congested, the redness extending to both pillars and along the edge of the soft palate. The conjunctiva of both eyes was red and injected. The tongue was coated, moist, and red along the edges. The chest was clear. November 6, profuse salivation had developed; so much so that the patient could get very little sleep. He was compelled to empty his mouth almost constantly; the inflammatory condition in the throat had extended to the mucous membrane of the soft and hard palate, lips and cheeks. The tongue was red and sore. A number of yellowish vesicles were visible on the soft palate, cheeks, the edges of the tongue, and along the vermilion border of the lips. November 7, the temperature was 103.4 F. That evening it reached 104 F., pulse 120. The eyes were very much congested and inflamed; purulent secretions gummed the edges of the lids together, and had to be washed off frequently. In this region the process was at its height between the tenth and twelfth days. The patient's sight was so blurred that it was difficult for him to distinguish objects across the room. Lesions first appeared on the dorsal surface of the hands and feet, November 9. A few hours later the knees and buttocks also were slightly involved, and a few vesicles developed on the ears, and one near the meatus. The development of the cutaneous eruption was accompanied by tingling and burning of the parts. This was followed by the formation of reddish macules, many of which later became the sites of thick-walled vesicles from the size of a pinhead to that of a pea, with purplish areolae. In the course of from twenty-four to seventy-two hours, the lesions became pustular, and finally either underwent desiccation, or sloughed, leaving red, raw surfaces which healed quite readily, and without scarring, in the course of about three weeks. Aside from the regions mentioned, no other areas were involved. The cutaneous manifestations in some respects simulated those of a severe example of erythema multiforme of the iris type, but the lesions were smaller, and the affected parts so deeply congested as to be purplish. Following the appearance of the vesicles, the subjective symptoms became trivial in character. There were no accompanying joint pains, such as have been noted as occurring in many instances of foot and mouth disease. For laboratory study, a small but mature vesicle was excised, under local anesthesia, from the inner surface of the right knee. A number of tubes of culture mediums of various kinds

Fig. 5.—Section through a vesicle from inner surface of knee, showing parakeratosis, acanthosis, edema and cellular infiltration (moderate magnification).

9. Clough: Bull. Johns Hopkins Hosp., 1915, xxvi, 351.

were inoculated from the contents of new and old vesicles and pustules, and also with the slimy, stringy mucus which fairly poured from the patient's mouth. Owing to the difficulty experienced in securing a calf for experimental inoculation, a small but well nourished kitten was substituted.

The excised tissue was fixed in liquor formaldehydi, and later sectioned in a freezing microtome, and stained with hematoxylin-eosin.

Pathology.—The corneous layer was thickened and parakeratotic. The stratum lucidum was increased in depth, and, as a result of the large amount of fluid which was present throughout the epidermis, appeared spongy and ill defined. The rete cells were increased in size as well as in number. The majority contained more or less fluid. Many had lost their nuclei, and in a few instances these elements were replaced by nonstaining vacuoles. The vesicle was situated in the lowermost layers of the rete. Its cavity was irregular in outline, and ragged septa served to partially divide and subdivide it into numerous compartments of various shapes and sizes. The structural changes characteristic of varioloform lesions were entirely lacking. The basal cell layer was practically obliterated. In this region also many of the nuclei had completely disappeared. The interpapillary plugs were indistinctly outlined, or altogether wanting. The entire prickle layer was spongy and edematous, and the seat of widespread fibrinous and leukocytic infiltration. No red cells were present. The infiltrative changes were most pronounced in the papillary region. Here the blood vessels and lymphatics were widely dilated, and perivascular infiltration (mostly of the small round-cell type) was a prominent feature. In the subpapillary layer the collagen bundles exhibited signs of compression, and the vascular changes were much less pronounced in character, although there was profuse round-cell infiltration in the vicinity of the coil gland ducts. Aside from the various types of staphylococci commonly found in the skin, the only organism worthy of note recovered from the lesions was a hemolytic streptococcus, which is at present being exhaustively studied by Dr. D. C. Smith. The kitten was placed in charge of Drs. Kinsey and Trickett, of the Kansas City Veterinary College, and kept under observation for several weeks. It appeared quite ill for about twenty-four hours, but no lesions of the skin or mucous membranes were observed at any time.

Fig. 1.—Lymphangioma circumscriptum of right buttock and inner surface of right thigh, April, 1914; patient in lithotomy position.

It is extremely unfortunate that we did not communicate the suspected character of the disorder directly to the officials of the U. S. Department of Agriculture. Had this been done, experimental inoculations could have been carried out on a much more extensive scale.

We are indebted to Dr. S. J. Crumbine of Topeka for valuable assistance and advice, and to Dr. Frank J. Hall of this city for aid in pathologic work.

A Chimera.—What a chimera is man! what a confused chaos! what a subject of contradiction! a professed judge of all things, yet a feeble worm of the earth! the great depository and guardian of truth, yet a mere huddle of uncertainty! the glory and the scandal of the universe!—Pascal.

RADIUM IN THE TREATMENT OF LYMPHANGIOMA CIRCUMSCRIPTUM

REPORT OF A CASE

FRANK E. SIMPSON, M.D.
CHICAGO

History.—L. L., woman, aged 21, first came under my observation at the Cook County Hospital in April, 1914. She presented a tumor of the skin involving principally the right buttock and the inner surface of the right thigh and covering an irregular surface measuring approximately 8 by 15 centimeters.

The tumor had been present since her earliest recollection. It was composed principally of irregularly grouped wartlike projections more than a centimeter high at the most elevated parts and of a dirty yellowish color.

On close inspection, the tumor was seen to be composed of innumerable thick-walled vesicles on which had developed in places a thickened hyperkeratotic epithelium giving the wartlike appearance noted before. Parts of the tumor, however, were more flat and were bluish black, being evidently made up of blood vessels. Lying beyond the main portion of the growth were many discrete, thick walled, yellowish vesicles containing clear serum. When these were pricked a clear serous oozing took place which sometimes lasted for hours.

From between the verrucous projections which composed the bulk of the growth a serous oozing occurred at times spontaneously, this being one of the symptoms for which relief had been sought.

Occasionally a few new vesicles had appeared at the periphery, persisting so that a considerable increase in the size of the growth since childhood had been noticed.

The clinical diagnosis was lymphangioma circumscriptum (lymphangiectodes, T. and C. Fox) and hemangioma. For microscopic study a small vesicle was excised, sectioned and stained with hematoxylin and eosin and with polychrome methylene blue.

Dr. B. Barker Beeson has kindly furnished me with the following notes made from a study of the sections:

Microscopic Examination.—Epidermis: The stratum corneum is somewhat thickened in places but no evidences of parakeratosis are present. The granular layer is also slightly increased in size. A marked acanthosis or proliferation of the rete malpighii is a prominent feature, and, plus the hyperkeratosis, gives to the section a verrucous appearance. Throughout, the basal layer is normal.

Corium: In the papillary and subpapillary layers one finds dilatation of the lymphatics and blood vessels, the former being especially well marked. A round-cell infiltrate surrounds the blood vessels. The number of connective tissue cells is also somewhat increased. Here and there, near the dilated lymphatics, scattered mast cells are to be seen.

That the tumor would yield to radium was expected from the success already obtained in the treatment of many pure angiomas of the skin and from my observations of the general effects of this agent on the skin and other tissues.

When I first undertook the treatment, in April, 1914, the effect of radium on tumors of this type had not to my knowledge been studied. Even earlier than this, however, Dr. Robert Abbe[1] of New York had begun the treatment of lymphangiomas with radium, and in August, 1915, he published an account of the results obtained in four lymphangiomas of the tongue and two of the skin.

These are apparently the first cases of this type recorded in which radium was used.

The success following radium treatment is so striking that a brief account of the technic which I employed may be of interest.

Treatment.—The most prominent part of the tumor was attacked first. Radium varnish applicators of one-quarter strength were usually employed. Four applicators of this type covering an area of 16 sq.cm. were applied unscreened for a period of one hour a day on four successive days. A series of four similar courses about four to six weeks apart sufficed to level the surface of the most prominent portions of the growth. As the tumor decreased in height the treatments consisted of an hourly seance each day (0.1 mm. lead screens being used over the face of the applicators) for five successive days. Two series of treatments of this sort at intervals of six weeks sufficed to cause complete retrogression of the growth.

In the less infiltrated parts a linen "toile" (one-twentieth strength) was sometimes used.

With this applicator screened with 1/100 aluminum a series of applications of an hour each day on five successive days, repeated four times, at intervals of about six weeks, sufficed for decolorizing and removing these areas.

The treatment was carried out more or less irregularly for various reasons, but the reduction of the growth, the alleviation of all symptoms and a good cosmetic appearance were obtained rather easily.

Fig. 2.—Same case after radium treatment, December, 1915.

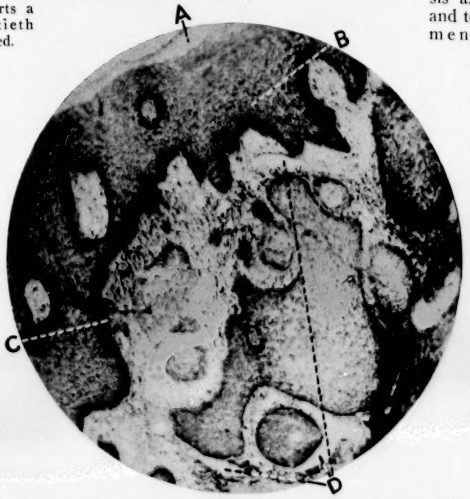

Fig. 3.—Photomicrograph, lymphangioma circumscriptum: *A*, thickened stratum corneum; *B*, rete malpighii, much increased in size; *C*, basal layer of epidermis, which is normal; *D*, dilated lymphatics.

CONCLUSION

In view of the difficulty which is frequently experienced with other methods of treatment, the use of radium in these rare and interesting cases would seem to be the method of election.

59 East Madison Street.

1. Abbe, Robert: Lymphangioma and Radium, Med. Rec., New York, 1915, lxxxviii, 215.

A METHOD FOR GRAPHIC DEMONSTRATION OF THE FOREIGN INORGANIC MATTER AND CARBON IN THE LUNGS*

EDWIN F. HIRSCH, PH.D., M.D.
CHICAGO

Coal dust pigmentation of the lungs has been given considerable study recently by Klotz,[1] whose review of the literature bearing on the subject contains most of the information available to date. It is not necessary, therefore, to take up such a review here, and this communication deals simply with a presentation of results obtained in the analysis of several lungs removed during necropsies performed on persons dying in the Cook County Hospital, Chicago, with also a method for displaying the results of these analyses mounted with one of the corresponding lungs. In addition to a quantitative estimation of the carbon, similar determinations were made of the calcium and silica content of the lungs. The object of the work was to get a definite idea of the amounts of soot present in lungs showing different degrees of anthracosis as observed at necropsy, and to prepare museum specimens showing graphically just how much foreign material there is in the ordinary city dweller's lungs.

The following method of analysis was used: The left lung was preserved as a museum specimen, while the right lung and the parabronchial lymph glands were ground up, weighed, and the dry weight determined after the tissues had been well desiccated. The dried tissues then were pulverized in a small coffee mill, and on this finely ground material all analyses were made in duplicate. The coal dust was estimated colorimetrically[2] by comparing known quantities of toluene

* From the Department of Pathology, University of Chicago, and the Otho S. A. Sprague Memorial Institute.

1. Klotz: Pulmonary Anthracosis, A Community Disease, Am. Jour. Pub. Health, 1910, iv, 887.
2. Liefmann: Ueber den Nachweiss von Russ in der Luft, Habilitationschrift, Halle, 1907.

soot, finely divided and suspended in liquid petrolatum, with the black residue obtained by digesting 1 gm. of dried lung tissue with antiformin until the organic material largely had been removed, and this then likewise finely divided and suspended in 10 c.c. of the colorless liquid petrolatum. Following the digestion of the tissue with antiformin, the coal dust was thrown down by centrifuging in the usual way, washing with acid alcohol, then ether, and finally transferring the residue to a glass mortar with a little ether, this being evaporated over a steam bath. The carbon residue was finely divided in a glass mortar, and suspended in the 10 c.c. of liquid petrolatum. The calcium and silica were determined gravimetrically according to a method outlined by Hans Aron.[3]

The results of these analyses are given in the accompanying table.

McCrae,[4] after reviewing the data concerning the silica content of lungs, presents analyses of seven lungs, six of which were silicotic and had been removed from the cadavers of miners, the other having been taken from the body of a native Zulu, and considered normal. The percentage of silica in the dried lung tissues varied between 0.73 in the normal to 4.47 in one of the silicotic lungs. The percentage figures obtained in my tabulated analyses are below the one (0.73) considered as normal by McCrae. This, however, is of no great significance, for from the fact that the infant's lungs contain no silica, and that probably all of the silica which accumulates in the lung tissues comes from the exterior, as McCrae suggested, the silica content of a lung would be determined by the duration of exposure to an atmosphere and the amount of silica contained in it. The same relation holds true so far as the carbon content of the lungs is concerned, for carbon is recognized equally well as being of extraneous origin. This conclusion has developed from Boer's[5] quantitative determination of carbon in the lungs of individuals at various stages of life. He observed no darkening of the solution when the lungs of small children and fetuses were digested with antiformin. He states, further, that the nature of the individual's occupation naturally exerts a great influence on the amount of coal dust inhaled and deposited in the lungs. Chimney sweepers and coal heavers must necessarily inhale more carbon particles than a sheep herder on some remote hillside. In the right and left lungs of a chimney sweep, Boer found, respectively, 8 and 5 gm. of coal dust measured colorimetrically in terms of naphthalene soot. Klotz determined the carbon content of several lungs gravimetrically, 0.145 gm. for the right lung being his lowest estimation. This lung was removed from the body of the storekeeper (aged 47) at a necropsy performed at Ann Arbor, Mich. This figure should be compared with 5.3 gm., determined in the left lung of a pedler, aged 28, at a necropsy performed in Pittsburgh. The minimum and maximum amounts in my analyses are, respectively, 0.19 and 2.72 gm., both estimations being for the right lung, and in all probability being typical for persons living in Chicago with occupations which do not expose them particularly to coal dust.

RESULTS OF ANALYSES

	Lung			
	1	2	3	4
Moist weight, gm.	365	284	427	438
Dry weight, gm.	80	70	96	78
Percentage of dry weight	21.92	24.65	22.48	17.81
Moisture percentage of moist weight	78.08	75.35	77.52	82.19
Ash, gm.	5.441	2.710	4.760	3.182
Ash percentage of dry weight	6.80	3.86	4.95	4.08
Foreign carbon, gm.	2.72	0.71	1.20	0.19
Carbon percentage of dry weight	3.40	1.01	1.25	0.24
Silica, gm.	0.1748	0.2757	0.6895	0.0361
Silica percentage of dry weight	0.21	0.39	0.72	0.04
Calcium oxid, gm.	0.4483	0.1180	0.0170	0.0545
Calcium oxid percentage of dry weight	0.56	0.17	0.02	0.07

Specimen demonstrating the amount of coal pigment and inorganic matter in an average city lung. The amount of pigmentation in the lung will be seen to be not more than is commonly found in persons living to adult years in smoky cities. In the tubes are shown the amount of foreign matter actually found in the companion lung and lymph glands: carbon as soot, 2.72 gm.; calcium oxid, 0.4483 gm.; silica, 0.1748 gm.

To illustrate objectively the amounts of carbon determined in the lung tissues, pieces of glass tubing, uniform in caliber, and sealed at one end were filled with weighed amounts of toluene soot corresponding to the determinations. The soot was pressed down firmly, and the tubes made comparative by making the column height directly proportional to the quantity of soot. A small cotton plug was firmly packed into the tube, and the open end sealed. In a similar way, equivalent quantities of calcium oxid were mounted, while for the silica, "kieselguhr" was used. These tubes with the proper left lung were mounted on a glass frame and placed in a large museum jar in a manner similar to the usual method for displaying preserved specimens. Such specimens should be of value in public health demonstrations, or similar exhibitions.

3. Aron, Hans, in Abderhalden: Handbuch der biochemischen Arbeitsmethoden, 1910, i, 401.
4. McCrae, J.: The Ash of Silicotic Lungs, South African Institute for Medical Research, 1913.
5. Boer, W.: Ueber quantitative Bestimmung des anthrakotischen Lungenpigments, Arch. f. Hyg., 1911, lxxiv, 973.

The Real Object of Hygiene.—Is it [hygiene] purely for the sake of the physical and mental health which will result? Is a pig in a clean pigpen any less a pig? . . . Is the fullest meaning of constructive health work to be found in its social, political and ethical interpretation, or does it have an even more fundamental significance? Is it not true that a healthy individual and a healthy society are the only adequate means or instruments through which may come a more perfect expression of the conscious life in the universe? The public health is not only inevitably tangled in the problems of economic readjustment and of social growth, but it is of intimate significance to both individual and social spiritual evolution. The health of the people, the physical and mental welfare of the nation and of the world are essential to the higher manifestation of conscious life, the Elan Vital, striving for a more perfect expression through the medium of human kind. —Donald B. Armstrong, M.D., *American Journal of Public Health*, December, 1915.

SINUS THROMBOSIS IN COMPRESSION*

CECIL E. REYNOLDS, M.R.C.S., L.R.C.P., D.P.H.
LOS ANGELES

There are naturally many reasons why all cases of cerebral compression should be relieved as early as possible. But in cases of acute pressure on the surface of the brain of a simple nonseptic and nonmalignant character, it was at one time my cherished belief that, provided the pressure was relieved and the cause removed before the vital centers were on the verge of complete paralysis, or the vasomotor center near to the end of its secondary depression and sepsis was excluded, the patient would recover with at worst some softening of the area locally affected, and perhaps some damage to the retina, unless an aspiration pneumonia supervened. I was soon removed from a state of complacency, however, by encountering cases in which another complication confronted me, and about which I have so far been unable to find mention in the literature as one of the results of simple aseptic acute compression. I refer to thrombosis by stasis of the cerebral sinuses.

It is true that Virchow's name has long been attached to a stagnatory thrombosis known as the "marasmic or marantic clot," but in the cases I am about to describe, the individuals were exceptionally robust; and of the three main causes of thrombosis, to wit, sepsis, damage to vessel wall, and stasis, only the latter was discoverable to account for the fatal termination. It still remains, therefore, for some one to observe and formulate an average duration and degree of compression likely to produce an irremediable thrombosis.

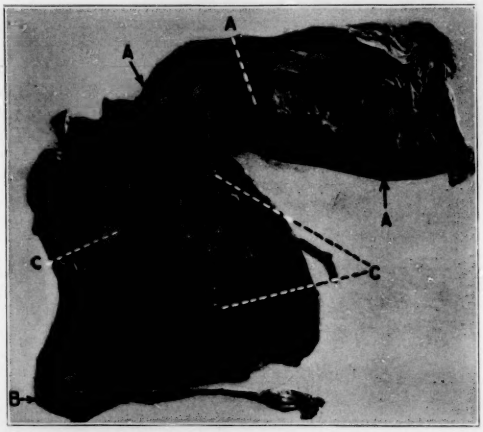

Fig. 1.—Piece of dura mater (Case 1) partly covered with remains of clot: *A, A,* superior longitudinal sinus, firmly thrombosed; *B,* posterior end of clot; *C, C,* remains of clot.

REPORT OF CASES

CASE 1.—A schoolgirl, aged 9, Dec. 4, 1914, at 4:30 p. m., was sitting on the back seat of a jitney bus, when a larger automobile collided with the bus, and the child's head came in contact with the shoulder of her aunt sitting beside her. The child complained of some headache at the time, but left the jitney and walked to a cafeteria, but she was too nauseated to eat and later vomited on the street. A druggist gave her acetylsalicylic acid (aspirin), and another druggist gave her something for a sick stomach, thereby showing more ability for commerce than for inquiry and foresight. When the patient arrived home at 5:45, she vomited again and was very drowsy.

At 6:30 o'clock she was almost speechless and soon become unconscious, vomiting watery bile at intervals. At 8 o'clock she could not be roused. At 10 o'clock convulsions set in in which the legs were drawn up and the arms and hands were pronated and flexed at the elbows and wrists, the head drawn back and the eyes deviated to the right, according to a practical nurse who was now in attendance. These convulsions occurred about every twenty minutes throughout the night.

I was called to the case for the first time next morning, December 5, at 8:45. The patient was then profoundly comatose, and the face and neck were swollen. All the limbs were flaccid; the pulse was 58, of poor volume; the temperature was 100; the respiration was of the Cheyne-Stokes type, and there was slight cyanosis. The eyes looked straight ahead and were glassy, the right pupil dilated three-fourths, the left contracted, no eyeball movements, no reflexes, visual axes parallel. The scalp was not bruised, but felt a little puffy over the region of the right temple. I operated at once with novocain. The usual subtemporal flap was turned down, and when the fibers of the temporal muscle were separated, it was found to be engorged and bled freely. On removal of the bone in the anterior temporal region, a black coagulated extradural clot was revealed. It required as large a defect in the bone as is indicated in Figure 2 to remove all of the clot and to secure the meningeal artery, which was lying free in the clot and was so friable that I had to pursue it almost to the foramen spinosum. During removal of the clot, respiration suddenly ceased with a serious fall of blood pressure, but the child was revived after fifteen minutes with the pulmotor. After being cleansed, the dura was incised, and edema fluid spurted out under pressure, but was quite clear. The brain was anemic. The dura was sutured with silk, the wound closed and a drain passed down to the dura. The patient was returned to bed pulseless, but soon rallied under restorative measures, especially a rectal drip of strong tea. From that time onward until she died, December 12, a week after the operation, there was most hopeful improvement physically, but consciousness was never fully restored.

The observation of the various reflexes was most interesting, but a detailed report of them is outside the scope of this paper. I may say, however, that the "Marie Foix reflex" was present soon after the operation. December 7, there was a brisk double Babinski, but the knee-jerks remained absent. The eyeballs moved from side to side, but the right eye at this time did not move beyond the middle line. Dr. Frank Miller found the edge of the right disk a little blurred. December 8, the right pupil began to contract up to normal, and the patient was able to cough up mucus. The triceps jerks reappeared. There was no rigidity.

December 9, purposive movements were executed, and the pupils reacted to light.

December 10, the knee jerks returned slightly. The Babinski was still brisk. Both eyes deviated, mostly to the right, but once or twice returned to the left. The axillary reflex was marked, and compression of the hands produced extreme pronation. Later the child was crying. Edema of the right eye was increasing.

December 11, crying was more frequent.

* Read before the Los Angeles County Medical Society, Feb. 3, 1916.

December 12, 6 a. m., the right pupil was again dilated; 9 a. m., cyanosis commenced; 6 p. m., patient died. The left pupil was dilated, the right pupil now contracted.

I observed one reflex that was new to me during the seven days after the operation in that light pressure forward on the angle of the jaw caused a marked downward retraction of the corner of the mouth on the left, that is, the paretic side.

The necropsy revealed no meningitis or other cause for persisting unconsciousness, except the thrombosis of the longitudinal sinus and veins leading to it. Moreover, I believe that the thrombosis was due in the first place to the length of time the pressure had existed. The clot had no tendency to soften, but I have no doubt that infection occurred later from the nose.

There was no fracture of the skull. The middle meningeal artery was severed by the sharp edge of the anterior border of the squamous temporal springing inward from its articulation with the great wing of the sphenoid over which the artery passes, and after severing the arteries it sprang into place. We found this articulation quite movable. The child in this case had previously enjoyed perfect health.

CASE 2.—August 11, Mr. C., aged 31, had felt unwell after taking a long walk in the sun. He later had frontal headache and some cough; also he vomited. He had in the past been a heavy drinker, but had not been drinking on this occasion. August 12, he rapidly became unconscious, and his physician found that he had a pulse of 80 and a normal temperature, but could not determine any paralysis. I was called to see him in the afternoon of August 13, after he had been unconscious for fourteen hours. I found him deeply comatose with stertorus breathing and all limbs flaccid. I could not determine by the Marie Foix test whether one side was more paralyzed than the other, but the eyes deviated to the right with a jerking nystagmoid movement. We removed him to the Angelus Hospital and I operated immediately. The coma was so profound that no anesthetic was used. On removing the bone over the right middle frontal lobe, I found an extensive subarachnoid hemorrhage, but in addition a great excess of intracerebral pressure. Some of the blood had caked on the surface of the brain, and since there was no sign of returning consciousness after relief of the pressure, I decided that the case was hopeless. The man died several hours later. At the necropsy we found in addition to the cortical hemorrhage a firm thrombosis of the right lateral sinus, extending into the torcula and involving the straight sinus—generally a hopeless condition.

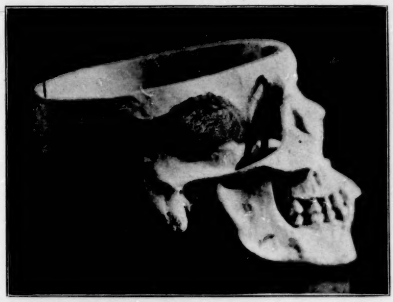

Fig. 2.—The darkened area shows the amount of bone removed in order to evacuate the clot.

There was no sign of ear, bone, nose, or scalp disease; neither had there been any symptoms referable to sinus thrombosis prior to the onset of the coma. Taken in conjunction with the fact that the temperature had been normal, and that the extravasated blood on the cortex was caked, I think it is fair to conclude that the hemorrhage was the primary lesion, and that the sinus thrombosis was the result of the prolonged pressure, as in Case 1.

COMMENT

It is, of course, well recognized that venous stasis is about the earliest effect of cerebral compression; but it is also recognized that stasis, pure and simple, is a rare cause of thrombosis in healthy young individuals; and since I have been unable to find mention of it as a possible early result of compression, I have felt that the citation of these cases may help by adding a drop to the bucket of pleas in favor of early decompression in well established cases irrespective of their cause or localization. I can look back, during the past twelve years, to sins of omission in my own practice; and I realize now that only the hand of custom and relics of antiquity prevented me from relieving, by surgery, cases of spontaneous cerebral hemorrhage that I would not have hesitated to operate on had they been traumatic. Of course, in Case 1, I am at a loss to understand why I, or some other surgeon, was not called on earlier; but Case 2 is illustrative of the rule that a doctor who would never dream of temporizing over a placenta praevia will, too often, suffer an unconsciousness of spontaneous origin to remain unlinked in his mind with surgical effort; and when confronted with a coma of spontaneous origin, there is thrown on the screen of his consciousness the series: drugs, epilepsy, uremia; and then in the apoplectic series there will occur to his mind "ice-caps, catheters, calomel and coffins." However, before surgery is employed, an accurate diagnosis of pressure is essential, for I have seen the most profound hemiplegias and comas from nothing worse than an angiospasm, and it would be unfortunate to have a patient sit up in the sudden way in which they do when recovering from an angiospastic coma during the course of an operation.

Given an increasing pressure, however, I am sure that any of us would rather immediately risk a piece of temporal bone than any cerebral function with the added risk of a fatal thrombosis.

I think, at least, that I have been able to show that the venous sinuses are less fool proof than are the medullary mechanisms, and far less recoverable.

Blood may find its way again into the compressed terminal arterioles of the cortex, but it is asking too much to expect an extensive thrombosis of the cerebral veins to be absorbed when the sinuses are also plugged.

506 Exchange Building.

Registration of Births.—The establishment of community records, such as those resulting from the registration of births, is one of the first evidences that a community expects to have some degree of permanency and the inhabitants do not consider themselves as temporary residents. This was as true of the Greek and Roman civilization as of our own. The necessity for the registration of births is felt in many of the activities of the modern state or city. The uses of registration are legal and social. It also may serve an important function in public health administration. . . . Official knowledge of every death and its cause is necessary in the interest of law, order and personal safety. Crime is likely to be more common where no official cognizance is taken of the disposal of bodies. For this reason the need for the official registration of deaths is felt by a community and enforced at an earlier stage in its development than is the registration of births.—J. W. Trask, *Public Health Reports*, Jan. 14, 1916.

INTRACRANIAL AEROCELE*

E. H. SKINNER, M.D., KANSAS CITY, Mo.

Shadows of a cavity containing air or gas within the cranium were seen on Roentgen negatives of a skull that had been fractured in an explosion of a gas well. The patient (Case 5454), referred, June 27, 1914, by Dr. H. E. Pearse of

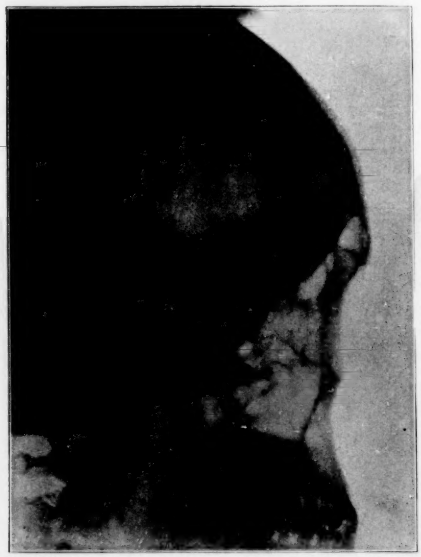

Fig. 1.—Lateral view, showing the transparent aerocele in the anterior part of the cranial cavity.

Kansas City and Dr. F. H. Morton of Okmulgee, Okla., had sustained a fracture of the right supra-orbital ridge of the skull in a gas well explosion four weeks previously. There was a healed scar over the right eye. The patient apparently had recovered, but complained of severe persistent headaches and dizziness.

Roentgen negatives taken June 27, 1914, showed a round area of increased transparency in the anterior part of the cranial cavity on the right side. In the lateral view the markings on the inner table of the skull and the diploic channels showed with unusual detail. The stereoscopic Roentgen negatives showed better the fracture of the supra-orbital ridge of the right frontal bone, the comminutions of the fracture extending into and through the posterior wall of the frontal sinus.

The Roentgen findings consisted in a comminuted fracture of the right frontal bone in the frontal sinus area with many irregularly placed fragments, and an air or gas bubble about the size of an egg in the anterior part of the right frontal lobe, which was apparently subdural. The interpretation was that it was a subdural air tumor, because it was a round shadow, and if it had been epidural, the air shadow would probably have conformed to the concavity of the inner table of the skull and depressed the dura, forming an elliptic shadow or meniscus-shaped shadow.

Operation was performed by Dr. H. E. Pearse at St. Luke's Hospital, June 29, 1914. The skull was trephined directly over the air tumor shadow 2 inches above the external angular process of the frontal bone. When the dura was exposed, there was a distinct bulge into the trephined opening with some crepitation and palpatory sense of air beneath. A blunt trocar was prepared with a rubber tube attached, the free end of the rubber tube being inserted into a beaker filled with water which was inverted in a basin of water. The dura was then nicked with a knife and the trocar inserted. Immediately the water was displaced downward in the inverted beaker as it filled with air from the tumor. The bulging dura collapsed. The trephine button was not replaced, but the wound was closed without further surgical venture.

The collected gas was chemically examined by Dr. Roy Cross, who reported as follows:

"Chemical analysis: oxygen, 1.8 per cent.; nitrogen, 98.2 per cent. No ethane, methane or unsaturated hydrocarbons. Air is usually 80 per cent. nitrogen, 20 per cent oxygen. This gas is practically air from which the oxygen has been absorbed by lymph. Oxygen has about twice the solubility of nitrogen and is infinitely more likely to undergo reduction or chemical reaction and thus be removed than is the case with nitrogen."

The fact that the patient sustained the injury in a gas well explosion prompted the collection of the contents at operation to satisfy the patient, for there was little doubt in the opinion of the surgeon and the roentgenologist that the air had leaked through the dura from the frontal sinus at the site of the fracture. The fact that there was no inflammatory reaction rather dispelled any supposition that the air tumor might have been caused by an infection.

The patient left the hospital in good condition at the end of ten days. Ten days later (twenty days after the operation) the patient developed a severe headache, temperature 104,

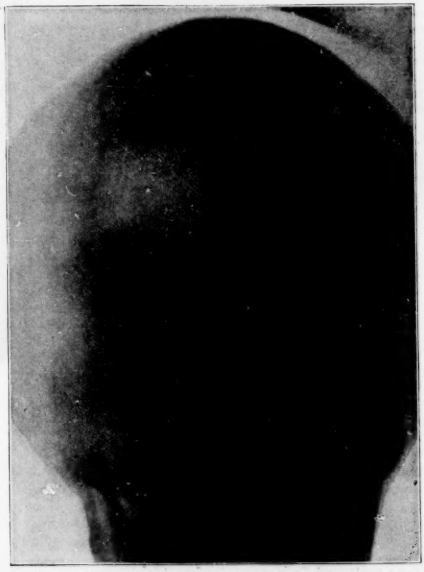

Fig. 2.—Postero-anterior view, showing transparent aerocele above the right orbital area.

pulse from 130 to 140, vomited and became unconscious. The pain was on the left side as far back as the ear. The left eye was swollen and edematous. The patient died the following day. Necropsy revealed leptomeningitis with a large amount of pus at the base of the brain.

1019 Rialto Building.

* Read before the American Roentgen Ray Society, September, 1914.

Therapeutics

BRACHIAL NEURITIS

Brachial neuritis may be produced by any of the chronic constitutional poisons, such as lead, arsenic, alcohol or tobacco; by uric acid disturbances; by altered metabolism of proteins; by insufficiency of the kidneys, and by diabetes. It may occur also from straining or injury to the brachial nerves or the brachial plexus. Lying on the arm at night frequently produces a brachial neuritis. The pain is particularly severe in the neuritis occurring in diabetes, but it may be severe from any cause. Pain shooting down the brachial nerves may be due to pressure from neighboring structures, as when there are rudimentary cervical ribs, or a subdeltoid bursitis.

The primary treatment depends on the etiology, and as in sciatica and in backache, a complete history should be secured and a careful examination of the patient should be made to determine the predisposing or exciting factor. This should be removed if possible. When the neuritis is due to some general poisoning, and perhaps always unless the patient is greatly debilitated, purging on several days, or alternate days, with a complete change in the diet, is a beginning treatment that may be valuable. Anything that causes pressure or injury to the brachial nerve or the brachial plexus must be removed before treatment will be at all successful. Any occupation or use of the arm that perpetuates the trouble must cease.

In rheumatic and related conditions, a course of sodium salicylate followed by a course of alkalies in conjunction with a vegetable and cereal diet will often be of rapid benefit.

If the pain is so severe as to prevent rest and sleep, the temporary use of narcotics may be necessary, and some hypnotic, as chloral or the bromids, is often advisable, at least for a short time. One of the coal-tar products may be of value. None of these depressants, however, should be long continued.

A patient with brachial neuritis rarely needs to go to bed; if he carries the arm in a sling he will get comfort and rest for the nerve, and have much less pain. The sling should support the elbow so that the arm will not drag on the painful muscles. At night, or at periods during the day, dry heat, as represented by an electric pad or a hot water bag, is of benefit. As in treating any other sore or painful nerve, the region should be kept warm with flannel or cotton. Sometimes gentle stroking upward, or massage along the course of the nerve to promote the flow of the lymph in the lymph channels, is soothing and relieves local congestion. Later, the arm may be extended and stretched, by the physician, in different directions. This stretching of the nerve seems not infrequently to relieve the pain and hasten recovery. This may be done daily or every second day for some time. Between times the arm should be at rest, until the acute and subacute stages of the inflammation are over.

Cataphoresis has many times been recommended for neuritis, and Howell[1] advocates using a 2 per cent. sodium salicylate solution or a solution of iodin locally, to be driven into the tissues by electricity, that is, by cataphoresis. Of course, the positive electrode with the constant current is made active. The negative pole may be placed anywhere on the back. According to his method, the arm is prepared by the use of hot air or hot compresses for a period before the ionization is begun, and after the treatment the arm is kept warm by being wrapped in wool or cotton.

Dry cupping of the tender nerve, especially as soon as the acute stage is over, is at times of benefit.

The high frequency current, either the d'Arsonval or the Oudin form of high frequency, has been recommended for brachial neuritis, and sometimes lessens the pain and is of benefit in hastening recovery. The treatment should be applied locally by a glass vacuum electrode, and the electrode should be passed along the whole course of the region of pain for a few minutes at first, and not for more than ten minutes at any one time, at first daily, and later less frequently.

In the recurrent deltoid muscle pains, which occur in some persons who have a tendency to malmetabolism of the proteins of meats, this form of high frequency current, or the violet ray bulb, will sometimes temporarily eradicate the pains. It may be used on the bare skin or through one layer of clothing, and close enough to spark freely into the muscle. It seems to promote resorption of the irritant deposits in the muscle or nerve tissue.

Whenever vacuum electrodes are used close to the skin, great care must be taken that burns are not caused. If the skin is covered, sometimes the current will be used longer and stronger than is intended, one being better able to observe on the bare skin the effect of the electric current; but after one or two treatments of a person, the susceptibility of his skin to irritation will be recognized, and the dosage and intensity subsequently modified to fit the individual.

Active massage is also of benefit in these cases, and the same is true of polarization with the constant or galvanic current for a few minutes, one electrode being indefinite, and the other, generally the negative, being active over the muscle for a few minutes.

When all acute symptoms of neuritis have disappeared, or the acute pain and inflammation in a muscle have disappeared, and yet recurrent aches occur, with more or less impaired motility, massage and mechanical vibrations are of value in completing the cure. If there is paresis or semiparalysis of one or more muscles, electric treatments are essential, or if the shoulder joint has become more or less impaired in its motion and function by the long continued inactivity, or adhesions have actually formed from the joint not having been properly used, active breaking up of the adhesions must be done. If too painful, this may be done rapidly under anesthesia; or less active, but repeated passive motion of this joint must be caused, tending to gain increased motility day by day until the joint becomes normal. The patient should also himself daily use the arm to a certain extent and then rest it, if necessary in a sling, for the remainder of the day, until he is able to use the arm for his duties without causing continued pain afterward.

1. Howell: Practitioner, London, March, 1914.

Spontaneous Generation.—The doctrine of spontaneous generation of life was not only current among the ancients, but we find it persisting through the middle ages, and descending to our own generation. In 1542, in his treatise called "De Subtilitate," we find Cardan asserting that water engenders fishes, and that many animals spring from fermentation. Van Helmont gives special instructions for the artificial production of mice, and Kircher in his "Mundus Subterraneus" (chapter "De Panspermia Rerum") describes and actually figures certain animals which were produced under his own eyes by the transforming influence of water on fragments of stems from different plants.—McFarland.

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SATURDAY, MARCH 25, 1916

THE NATURE OF CAFFEIN DIURESIS

The response of the kidneys after the administration of diuretics is only a single instance of the specific behavior of various organs in the presence of foreign substances in the body. Every attempt to analyze the nature of such a physiologic response of cellular parts, like the glands, to the stimulus of either a drug or a normal product of tissue disintegration brings us face to face with the diversity of the factors involved. Something unusual happens in the domain of physiologic performance; we may know the beginning and the end of the story, but the intermediate acts may remain unrevealed. When the physiologic phenomena are very complex we are likely to be quite as baffled as the untutored individual who watches the conjuror put a loaf into his hat and take out two rabbits. In the case of secretory organs in the living body, the cells are influenced in the character of their performances by the nervous impulses which come to them, by the variations in the blood supply — the blood pressure and rate of flow as well as the chemical composition of the circulating medium in respect to nutrients, oxygen and metabolic waste products. A chemical stimulant, or "hormone," discharged from one organ may reach another cell group where it can produce a typical effect independent of every other circulatory or nervous factor. Such is the complexity of the physiologic mechanism of cell life.

The realization of the almost insuperable difficulty of dealing with these highly complicated situations, in which numerous variables acting at the same moment may obscure the factor of real importance in any phenomenon, has impelled investigators to narrow their fields of observation. One result of this has been the introduction of methods for studying isolated organs, especially when they can be perfused artificially so as to supply some of the factors essential for their continued function. The earlier attempts in this direction were comparatively crude and often failed to imitate the mechanical features of the circulation. Today the details of artificial perfusion have been perfected to a point at which the pressure, rate of flow, composition and oxygen supply of the perfusing liquid appear to satisfy the normal demands of the body cells. Accordingly we find this significant description concerning one of the latest of the now numerous forms of apparatus for the perfusion of isolated organs:

> A dog's kidney was perfused with blood from the same animal. A slow elimination of fluid from the ureter occurred which was yellow in color, acid in reaction, gave slight positive reaction for albumin which was less intense than the reaction yielded by the bladder urine from the same dog, did not reduce Fehling's solution, gave Jaffé's test for creatinin and underwent ammoniacal fermentation on standing.[1]

This quotation deserves emphasis in reply to the usual criticism, applied to all perfusion experiments, that the conditions established are so far removed from those in the intact animal that conclusions drawn regarding them are not directly applicable to the organism as a whole. Certainly the technic now available is adequate to permit the retention by the kidney of the power of producing a typical secretory product.

With the help of such methods of studying the action of isolated organs, in which the participation of extrinsic nervous elements is excluded and the blood supply can be controlled at will, there is a prospect of defining more accurately the mode of action of some of the familiar drugs. An intelligent analysis of pharmacologic responses is, of course, the ideal basis for rational therapeutics. The diuretics, which are at present so widely used in medicine, have offered special difficulties in the interpretation of their behavior, because of the complexity of the kidney functions. Many, if not most, diuretics act by diminishing the osmotic concentration of the blood colloids; others exert a more specific action of some kind, perhaps on the cells of the renal tubules.

The diuretic action of caffein may increase the output of urine per unit of time 50 per cent. or more. Associated with the augmented elimination of water there is an increase in both the organic and inorganic components of the urine. This characteristic response to the presence of caffein has been explained in various ways. Some have described it as secondary to an effect on the circulation which must necessarily be an important factor in the production of urine. To elaborate on this point would necessitate a review of the modern physiology of urinary secretion. A larger number of pharmacologists are at present committed to the belief that the diuretic action of caffein is better explained as a primary stimulation of the renal epithelium, analogous to the behavior of drugs of this class as irritants to the muscular and nervous tissues. The measurement of the oxygen consumption of a gland gives some indication of the nature of the cell processes; and the fact that, according to Barcroft and

1. Richards, A. N., and Drinker, C. K.: An Apparatus for the Perfusion of Isolated Organs, Jour. Pharmacol. and Exper. Therap., 1915, vii, 467.

Straub,[2] caffein markedly increases the gaseous metabolism of the kidney is taken to point to the stimulation of the renal epithelium as the distinctive feature of its action.

Nevertheless, competent pharmacologists have only recently felt justified in stating that "our knowledge of kidney function is insufficient to permit a wholly convincing analysis of the effect of a drug upon it. The various factors in urine formation are so intricate that the personal factor must inevitably play a part in the acceptance of explanations of drug actions." [3] At the Pharmacologic Laboratory of the University of Pennsylvania, Richards and Plant[3] have succeeded in observing the effect of caffein on the perfused kidney under conditions in which the blood flow — a factor of universally admitted importance — was kept constant and independent of the action of the drug. They found that even under these conditions caffein caused diuresis. From this it may be concluded that the increase in blood flow which occurs in the intact individual as the result of the vasodilation of the kidney vessels produced by the drug is not an essential factor in caffein diuresis.

FOCAL INFECTION IN RELATION TO RHEUMATIC IRITIS

The association of iritis with arthritis and myositis is so striking that a rheumatic group comprising, according to most textbooks, about 25 per cent. of the cases, has been established. After excluding all other causal factors, such as syphilis, gonorrhea and tuberculosis, there remains a small group heretofore classed as idiopathic. In most cases, the action of toxins rather than the localization of bacteria is advanced to explain the development of iritis, repeated attacks being ascribed to sensitization of the tissues. Trauma of the eye, insignificant, or severe as in operations, has been recognized clinically as favoring the development of iritis without direct infection from the outside.

Examination of the blood and of infectious foci is giving us new views of the nature of iritis. The frequent finding of bacteria in blood cultures of apparently normal as well as of acutely febrile patients, with the presence of bacterial foci that are potential if not actual portals of entry, indicates that direct localization of organisms may be responsible for the lesions. In other words, the process may be analogous to that of arthritis, in which foci of infection are regarded as playing an important rôle. If this explanation is correct, sensitization may result from the lodging of bacterial emboli in the eye, and the rôle of trauma in the causation of disease of the eye may be as significant as it is in bone infections.

2. Barcroft, J., and Straub, H.: Jour. Physiol., 1910-1911, xli, 145.
3. Richards, A. N., and Plant, O. H.: Urine Formation by the Perfused Kidney: Preliminary Experiments on the Action of Caffein, Jour. Pharmacol. and Exper. Therap., 1915, vii, 485.

Clinical evidence in support of this view is not wanting. Stock[1] has reviewed the reports which indicate that pyogenic organisms may cause slight inflammation in the eye which soon subsides. More virulent infections, particularly with streptococci and pneumococci, as in septic abortion, have produced panophthalmitis. Experimentally, Stock produced iritis scarcely distinguishable from that of tuberculosis by intravenous injection of pathogenic yeasts. Korolkow operated on the iris of thirty-two rabbits previously injected with *Bacillus pyocyaneus*, and produced suppurative iritis in five cases. Rosenow[2] injected animals with streptococci from various sources, and observed eye lesions, such as unilateral panophthalmitis, hemorrhage in the limbus with or without episcleritis, iritis or iridocyclitis, conjunctivitis, usually bilateral, and corneal ulcer. Of these lesions, 17 per cent. developed after injection of strains isolated from arthritis and myositis, and 15 per cent. after injection of strains from herpes zoster. Other strains failed to produce lesions unless brought to a certain grade of virulence by animal passage. He considers this localization as not accidental, and suggests that about the ciliary body or iris (as about the joints and more tendinous part of the muscles) there is a gradation from an abundant to a poor blood supply, and consequently of oxygen, predisposing to the localization and growth of bacteria.

More recent experiments support the observation that many cases of iritis are infectious. Irons, Brown and Nadler[3] have produced iritis in rabbits by intravenous injection of streptococci isolated from a focus of infection in a patient suffering with iridocyclitis. Streptococci isolated from a chronic suppurating tear duct produced iritis demonstrable clinically, by microscopic examination and by cultures in three of the first four rabbits injected, and in two of four animals injected with organisms isolated from the original source at a later date. Subsequent injections of biologically similar organisms isolated from the original source at intervals of about a week failed to produce eye lesions in a series of twenty-two rabbits. In one case iritis resulted from the injection of streptococci isolated from one of the infected eyes. In none of the animals were other gross lesions observed beyond an occasional arthritis.

With more careful search for foci of infection in cases of iritis, it is probable that the so-called rheumatic group will be found larger than supposed, and that many of the cases described as idiopathic are due to bacterial embolism from an undiscovered focus. The rôle of toxins apart from their elaboration in bacterial foci must be regarded as questionable.

1. Stock, W.: Ergebn. d. allg. Path. u. path. Anat. d. Auges, Lubarsch-Ostertag, 1910, p. 112.
2. Rosenow, E. C.: Iritis and Other Ocular Lesions on Intravenous Injection of Streptococci, Jour. Infect. Dis., 1915, xvii, 403.
3. Irons, E. E.; Brown, E. V. L., and Nadler, W. H.: Localization of Streptococci in the Eye, Jour. Infect. Dis., 1916, xviii, 315.

THE AMINO-ACIDS AND GROWTH

It is becoming more apparent that in order to be entirely suitable for the nutritive needs of the body, the protein component of the diet must yield a number of different amino-acids in sufficient abundance to prevent any deficit of these in certain processes going on in the organism. This is equivalent to saying that the animal body cannot construct some, at least, of the essential amino-acids anew. The well-known nutritive inferiority of gelatin, for example, is now properly attributed to the fact that it does not yield tyrosin, tryptophan or the sulphur-containing amino-acid cystin as the result of its digestive disintegration. Consequently, gelatin alone cannot supply the nitrogenous requirements of the organism.

Amino-acid deficiencies of this sort become particularly conspicuous during growth in which the construction of new protoplasmic tissue demands the amino-acid "building stones" or "Bausteine" required to form perfect animal protein either for the blood or for the developing organs. In their extensive researches on the relation of different proteins to growth, Osborne and Mendel[1] have furnished striking instances of the failure of animals to grow when proteins "inadequate" from the amino-acid standpoint were alone supplied in the ration. Replacement of such proteins by others which furnish the missing nutrient units, or even addition of the needed amino-acids such as lysin or tryptophan or cystin, without other qualitative changes in the diet, may promptly bring about improvement in growth. Mendel has remarked that from the standpoint of economy, therefore, it is advantageous to learn the amino-acid make-up of all available food proteins, so that they can be administered in proportions furnishing a balanced total amino-acid make-up as nearly ideal as possible. This means far more, in a practical way, to animal production in agriculture than to human nutrition, in which we are more lavish with our resources.

In conformity with these ideas, a group of investigators at the Kentucky Agricultural Experiment Station[2] have conducted a series of feeding experiments on young chicks with grain rations containing a high and low content, respectively, of lysin. This amino-acid factor was selected because it had been shown by Osborne and Mendel[1] that without lysin or lysin-yielding protein in the ration, growth was not secured in the species with which they experimented. For the chick experiment a suitable mixture of foods was selected to contain a large variety of components, so as to furnish other factors such as the mineral ingredients, carbohydrates, fats, etc., in presumably adequate abundance and have a mixture of various protein foods characterized by no striking deficiency other than that of lysin in the one case. The ingredients of the ration higher in lysin included wheat, wheat bran, sunflower seed and hemp seed, cracked corn and skimmed milk. The other ration was composed essentially of barley, rice, hominy, oats and some milk products. These details are mentioned to show how a diet seemingly liberal in respect to variety of food sources may still be restricted in respect to some single essential component, and how uncertain may be the significance of the current methods of estimating food values solely on the basis of calories, total protein and other nutrients.

The outcome of these interesting experiments, so important for the question of nutrition in growth, was unmistakable. The chicks showed marked differences in the rate of growth and development, those on the rations relatively high in their yield of lysin progressing far better than the animals in which this feature was correspondingly deficient. The differences were shown favorably not only in respect to the gains in body weight but also in the more prompt development of the secondary sexual characters in the lysin-rich group. These results are of significance from both the practical and the purely scientific standpoint. As the Kentucky investigators remark, the financial returns to poultrymen from a successful method of feeding young chicks and laying hens would be enormous. To the student of human nutrition they emphasize anew the importance of the latest conceptions of protein metabolism in which the functions of the several amino-acids have become the center of lively interest.

1. The literature is reviewed by Mendel, L. B.: Nutrition and Growth, THE JOURNAL A. M. A., May 8, 1915, p. 1539.

2. Buckner, G. D.; Nollau, E. H., and Kastle, J. H.: The Feeding of Young Chicks on Grain Mixtures of High and Low Lysin Content, Am. Jour. Physiol., 1915, xxxix, 162.

LABORATORY INFECTION WITH TYPHOID

The one incontrovertible proof that a given bacterium is the cause of a specific human disease is furnished by the production of that disease in man through infection with pure cultures of the organisms. Not infrequently such evidence has been obtained by investigators through inoculation of themselves or of volunteers; occasionally some progressive murderer has conducted an accurate and convincing experiment, an account of which has subsequently been published not entirely with his approval or under his authorship; and accidental infections in laboratories have furnished conclusive proof far more often than is perhaps generally realized. Of all pathogenic bacteria, the one in worst repute in laboratories is the glanders bacillus, and probably it deserves this reputation. There are many instances, both reported and unreported, of laboratory infection with pure cultures of *Bacillus mallei*, and with these infections the mortality is extremely high. There is one striking instance of infection of several workers in a laboratory in which cultures of glanders bacilli were centrifugated in a broken tube, spraying the bacilli freely in the air. While typhus

is notorious for infecting physicians and investigators, these infections take place through natural methods and not with pure cultures, so that they add little to our knowledge of the disease. Plague bacilli have infected numerous laboratory workers, and so have cholera vibrios. Macfadyen and two of his assistants became infected with the bacillus of Malta fever during experiments with this organism, the disease ending fatally in the chief.

Perhaps on account of its widespread use in laboratories, the typhoid bacillus has been especially prominent as a cause of laboratory infections; but fortunately the mortality rate is so much lower than with most of these other diseases that it has probably not caused many fatalities. These infections have had also a certain scientific value, since typical typhoid fever cannot be produced in laboratory animals, and hence each carefully observed case of laboratory infection constitutes an accurate experiment. If we are correctly informed, the first person to demonstrate conclusively the specific etiology of typhoid fever was a serving woman in the Pasteur Institute who, for some reason tired of life, took advantage of the means at hand and swallowed a culture of typhoid bacilli. She did not die, and hence failed to accomplish both her own purpose and the final anatomic demonstration of the experiment; but she did pass through a typical course of typhoid fever. Since that time accidental and intentional infections with typhoid bacilli have been reported frequently.

So common, indeed, are such occurrences, that by simply sending out a questionnaire among his colleagues in Germany and Austria, Kisskalt[1] was able to collect reports of no less than fifty cases of certain or probable laboratory infection with typhoid. Of these, thirty-six were from pure cultures, four from urine or feces, and ten uncertain. Analysis of these cases gives much interesting information. Usually the bacilli entered the mouth while cultures were being sucked into a pipet, and although the mouth was in most cases washed out as thoroughly as possible with antiseptics of various sorts, infection occurred. There were collected in addition ten other instances in which after aspiration of typhoid bacilli into the mouth no infection occurred, and it is well known to laboratory workers that this accident happens frequently without infection resulting. The mortality was six, or 12 per cent., which indicates that in spite of the very large doses which were presumably obtained, as compared with the dosage of drinking water infection, the virulence of the disease was not much if any greater than in ordinary infections. In other respects also the disease was quite the same as when acquired from more usual sources.

There is some evidence that cultures obtained at necropsy in fatal cases usually cause more severe infections than cultures from urine or stools in nonfatal cases; but the material is not large enough to permit a positive opinion on this point. One fact which does come out definitely is that cultures carried for months and years on artificial mediums are quite as virulent for man as cultures fresh from typhoid patients. It is certain that many pathogenic bacteria lose much in virulence through long cultivation on laboratory mediums; but the typhoid bacillus seems to be less affected by artificial environment. Apparently the virulence for human subjects also bore little relation to the virulence the bacilli had shown for animals during laboratory experiments. These laboratory infections furnish ideal conditions for determining the incubation period, which was found to vary from five to twenty-one days, although all but five out of seventeen cases in which the incubation was established probably occurred between the twelfth and fourteenth days.

1. Kisskalt: Ztschr. f. Hyg., 1915, lxxx, 145.

DEGENERATIVE NEPHRITIS AND AMMONIA EXCRETION

It has been asserted as a necessary postulate of biology that no function of an organ is independent of any other, and that the doctrine of probability would lead us to expect the dependence to be often great enough to be detected.[1] In the course of the past few years, many data have been accumulated in relation to the excretion factors of the kidneys in health and in disease. Some have involved the observations afforded by the so-called tests of renal function, such as the estimation of the capacity of the kidneys to excrete phenolsulphonephthalein, sodium chlorid, lactose, iodids, etc. Others have been concerned with the variations in the composition of the blood in relation to the prompt or delayed excretion of metabolic waste products. The interrelations of the kidney function with the alveolar carbon dioxid tension, the affinity of hemoglobin in the blood for oxygen, and the alkalinity of the circulating medium furnish further illustrations of phenomena which doubtless often have a common basis, but still demand consideration from a comprehensive point of view.

The inability of the kidneys to excrete the nonprotein nitrogenous constituents which accumulate in the blood in a normal manner represents a pathologic variation which is now readily recognized by the medium of blood analysis. Palmer and Henderson[2] have recently shown some interesting correlations of this recognized abnormality with other features of defective renal function. In the late stages of chronic nephritis of the glomerular type, it is usual to find high noncoagulable nitrogen in the blood, a much reduced phenolsulphonephthalein excretion, a high blood pres-

1. Henderson, L. J., and Palmer, W. W.: On the Several Factors of Acid Excretion, Jour. Biol. Chem., 1914, xvii, 314.
2. Palmer, W. W., and Henderson, L. J.: A Study of the Several Factors of Acid Excretion in Nephritis, Arch. Int. Med., July, 1915, p. 109.

sure, large amounts of albumin and low specific gravity of the urine. Along with these symptoms there goes a volume of urine which is abnormally large, its acidity abnormally intense, and the total acid excretion much diminished. These are signs of a condition of acidosis which may be of renal origin. There seems to be little doubt at present that mild grades of acidosis regularly occur in certain of the more severe types of chronic renal disease. The new contribution of the investigators at the Massachusetts General Hospital[2] lies in the demonstration that the diminished acid excretion is due to a never-failing deficit in the urinary ammonia. In milder cases illustrating a degenerative type of nephritis and earlier stages of glomerulonephritis, the deviations from the normal, in respect to the symptoms recorded above, may not be so striking as one finds in the sharply defined group of chronic forms; nevertheless, even here suggestions of borderline acidosis are accompanied by corresponding fluctuations in the urinary ammonia.

The excretion of ammonia is certainly one of the essential factors in regulating the reaction of the body. From the clinical evidence and pathologic data at hand, Palmer and Henderson venture the general assertion that severe injury to the glomeruli is commonly accompanied by reduced ammonia excretion. A condition of acidosis may also be in evidence. It seems reasonable, therefore, to suppose, as they conclude, that the failure of ammonia to do its work in the regulation of the reaction of the body may here be the cause of this condition.

THE PITUITARY AND SEXUAL DEVELOPMENT

There is a growing belief that the pituitary body is concerned in some way with the functions of growth. The uncertainty is engendered by the circumstance that much of the earlier support for this relationship has been derived from clinical observations and incidental evidence. These are always liable to a considerable degree of error or correction, owing to the uncontrollable conditions and the numerous variables which enter into the indirect study of patients. More exact methods of investigation may always be expected to correct or revise the suggestions obtained from the bedside, the clinic or the necropsy room. In the case of the pituitary functions it has unfortunately happened that the results of experimental interference have remained somewhat in dispute. Perhaps one reason for this lies in the uncertainty which attends the use of the word "growth." The experiments of Gudernatsch and others[1] have emphasized the fact that in discussing development one must distinguish clearly between the differentiation of the parts of the body and the actual increase in size. Metamorphosis of an organism may proceed quite independently of growth in this broader sense. Confusion may therefore easily arise unless care is taken to define accurately what phases of the developmental changes are under consideration in any specific instance.

The development of the sex glands and the consequent evolution of certain secondary sexual peculiarities of form and behavior are undoubtedly closely associated with growth at certain stages. Among the reasons which have been advanced for the presumable existence of an interrelationship between the pituitary and the sex glands are the observations made in acromegaly and gigantism, on the one hand, and in the syndrome known as the dystrophia adiposogenitalis of Fröhlich, on the other. The clinical hypopituitarism of the latter type is characterized by adiposity and genital aplasia. If the pituitary insufficiency antedates puberty, the secondary sex characters may fail to develop, as in certain types of infantilism. If sexual maturity has been reached before the onset of the hypopituitarism, the secondary sex characters may become retrogressive, with associated loss of function on the part of the sex glands. Hyperpituitarism, on the other hand, shows evidences of early overactivity of these glands; though in the later stages of acromegaly, in which there is a final period of pituitary inactivity, there may be a high degree of atrophy of the sex glands and secondary sexual retrogression in both sexes. Further clinical instances of an interrelationship between the pituitary and sexual development may be seen in pregnancy, in which a hyperplasia and hypertrophy of the anterior lobe of the hypophysis often occurs, and likewise in the secondary pituitary hypertrophy seen to follow castration in man.

Experimental hypopituitarism produced by partial hypophysectomy in animals, particularly by Cushing and his collaborators,[2] has frequently been attended by a characteristic retardation of sexual development in young subjects and sexual retrogression in adults. The attempts to institute a condition of pituitary hyperfunction have not been equally successful. The device of transplantation of additional pituitary substance has proved to be unsuccessful thus far. The efforts to supply an excess of the glandular product by direct administration have been more successful in affecting alterations in the sphere of sexual development. Goetsch[3] has added a series of successful feeding experiments on rats to the literature of the subject. These show that the administration of pituitary anterior lobe extract, even by the oral path, causes increased weight and more vigorous body growth and development than untreated control animals show. There is similarly an earlier and more active genital development. The sexual instincts appear to be awakened earlier, along with the earlier maturity of the sex

1. The Thyroid and Thymus in Relation to Development, editorial, THE JOURNAL A. M. A., July 4, 1914, p. 34; Recent Experiments Relating to the Endocrine Glands and Development, Feb. 19, 1916, p. 576.

2. Cushing, Harvey: The Pituitary Body and Its Disorders, Philadelphia, 1912.

3. Goetsch, Emil: The Influence of Pituitary Feeding upon Growth and Sexual Development, Bull. Johns Hopkins Hosp., 1916, xxvii, 29.

glands. The effect of the anterior lobe feeding was seen to last throughout the adult life of the individual. The administration of the anterior lobe gland substance to parent animals evidently also exerts a stimulating influence on the offspring in intra-uterine life and during lactation; and when the experiment is carried further, and the feeding to the young is continued after weaning, it has an even greater stimulating effect on growth, weight and development, and causes earlier and more frequent breeding, and an increased number of offspring in the litters. The correlated changes in the sex glands — the ovaries, tubes and uterus of the female, and the testes of the male — produced by this feeding of a pituitary extract show an extremely selective and almost specific action of the latter on the genital system, according to Goetsch.

The posterior lobe element, on the other hand, has an undoubted retarding influence on the development of the sex glands. Therefore when the entire gland is fed, the peculiar influence of the anterior lobe portion may be obscured or nullified. Ovarian extract (corpus luteum), according to Goetsch's observation, has a stimulating influence on the female, and a retarding influence on the male, sexual development.

The outcome of the feeding of pituitary to laboratory animals, Goetsch suggests, should encourage further efforts to benefit states of ductless gland underfunction, particularly of the hypophysis, by the oral and possibly the parenteral administration of gland extracts. We are reminded that some success has already been attained by such therapy. Instances of characteristic sexual disturbances, including retarded menstruation and loss of sexual potency, may be cited. Since many of the clinical conditions showing genital aplasia, adiposity and underdevelopment combine symptoms referable to certain of the ductless glands other than the pituitary, Goetsch has suggested that the extract of the latter should be given to help bring about normal sexual development and activity, and that with it might be given extracts of other ductless glands which would seem certainly to be involved.

Typhoid Immunizations During 1915.—It has been the experience of the New York health department that persons whose circumstances permitted them to live elsewhere after the first alarm of typhoid, or who belonged to families in which the patient could be completely isolated, were apt to refuse immunization, while in crowded homes where conditions were bad the people were more ready to consent and the health department was more disposed to insist on the procedure. During 1915 there were a large number of complete immunizations in connection with institutional outbreaks. Here the situation could be controlled, and practically every one exposed to infection was immunized, the actual number of complete immunizations being 4,150 for the year. This measure appeared to have a striking influence in checking the institution outbreaks. The point to be emphasized is not the efficacy of typhoid vaccination, since that is manifest and unquestioned, but to present the subject to the private physician and to urge his cooperation with the representative of the department in securing the immunization of all persons exposed to typhoid fever (save the few cases in which it is contraindicated).

Current Comment

INORGANIC SALTS IN THE DEVELOPMENT OF THE BODY

Little of a fundamental character is known today with respect to the real rôle of the inorganic elements in the body. That a bone cannot develop without calcium, that a red blood corpuscle cannot come into existence without iron, or gastric juice exhibit its acidity without chlorin are biologic platitudes. But the list of the ions which continually find their way into the body is by no means limited to so brief a number of the elements. Potassium, sodium and magnesium, phosphorus and sulphur derivatives likewise belong in the customary intake, and they make up an integral part of living animal forms. To what extent are they also necessary? What are their various functions? It is by no means futile to ask such questions, even if we customarily are indifferent to the answers. Only recently it was pointed out[1] that potassium salts may exhibit unsuspected toxicity when they are prevented by suppression of kidney function from being promptly eliminated. Yet potassium is surely no foreign element in the human organism. The subtle part played by such elements and their salts is seen, for example, in the fact that a muscle, according to Overton, will lose its irritability if immersed in sugar solution, whereas the irritability is preserved if a small amount of sodium chlorid is added. Let us frankly confess that the physiology and pathology of the inorganic elements in the body still remain largely to be written. Jacques Loeb[2] has furnished an interesting instance of unexpected findings with respect to the relation of inorganic elements to motility. Not long ago he demonstrated that it is possible to raise the banana fly on a sterilized liquid medium consisting of water, one or two sugars (glucose and sucrose), one ammonium salt (for example, ammonium tartrate) and some inorganic salts.[3] Such a mixture is a well-known culture medium for certain micro-organisms, as yeast cells, which are capable of synthesizing their proteins and other complicated organic compounds from ammonium salts. This remarkable outcome, suggesting the possibility of development of fairly complex animal organisms by synthetic processes from very elementary compounds, has furnished an opportunity to ascertain which of these are truly indispensable. For micro-organisms the indispensable ions are, as a rule, the potassium, magnesium, phosphate and sulphate ions, while very often neither sodium chlorid nor calcium chlorid is required. In Loeb's new experiments, five successive generations of flies have been raised in platinum vessels without any sodium or calcium chlorid other than that which may appear as impurities in the chemicals used. The only salts added were potassium phosphate and magnesium sulphate. Loeb concludes that as far as the evidence from these experiments

1. The Kidneys as a Factor of Safety, Current Comment, THE JOURNAL A. M. A., Dec. 25, 1915, p. 2246.
2. Loeb, Jacques: The Salts Required for the Development of Insects, Jour. Biol. Chem., 1915, xxiii, 431.
3. Loeb, Jacques: Science, 1915, xli, 169.

goes we can, therefore, say that in these flies the muscular activity is possible either without any sodium or calcium or with only such traces as appear in the form of impurities in the chemically pure substances used in these experiments; while potassium as well as phosphate, and also sulphate, and magnesium must be added to the culture medium in appreciable quantity. No one will be justified in applying these facts obtained from lower forms directly to the higher mammals. They show, however, that when it is possible to conduct investigations under controllable and relatively simple conditions, surprising features of physiologic performance are sometimes disclosed. These should serve as clues in the endeavor to unravel the complexities of the functions of the less elementary forms of life.

ALCOHOL AND IMMUNITY

The present campaign against the undue use of alcoholic liquors differs from the crusades of a generation ago in attempting to support all of its movements by the best evidence that science can furnish. It is likely to succeed all the better, because the facts already ascertained to be true and sifted by critical analysis from the mass of conflicting statement advanced in the earlier period in themselves furnish a sufficient warning against excessive indulgence. Today it merely remains necessary to mobilize these facts and advance them in the form of reasonable arguments rather than exaggerated claims. Recently we presented evidence regarding the untoward effects of comparatively small doses of alcohol on some of the fundamental neural activities in man.[1] The inevitable outcome is the establishment of a depression even of the simplest forms of motor processes. There was nothing whatever to suggest true stimulation or increase in efficiency. There is not a little evidence pointing to an unmistakable lowering of bodily resistance to disease after the prolonged administration of alcohol.[2] This may manifest itself in a restricted formation of antibodies, and in increased susceptibility to bacterial infection, and related phenomena. One feature of this phase of the alcohol problem has lately been the subject of new investigations which relate to the immunity factor. Among others, Parkinson[3] failed to establish any influence of the use of alcohol on phagocytosis except when large doses or continuous moderate doses were taken. At the hygienic institute of the University of Munich, Reich[4] has continued the study of the blood cells in moderate drinkers as contrasted with abstainers. He found that the extent of phagocytosis of tubercle bacilli by human leukocytes in human serum showed no definite relation to the use of alcohol by the subjects. The bactericidal action of normal human blood serum on typhoid organisms was observed to be more pronounced, on the average, in abstainers than in those accustomed to large quantities of alcohol. The phagocytosis of typhoid bacilli likewise was accomplished more readily by the cells of those who do not indulge or rarely consume spirituous liquors. Furthermore, the resistance of human red blood corpuscles to hypotonic salt solution appears to be diminished in some proportionate relation to the degree of alcoholic indulgence. It should be clearly understood that these unfavorable biologic phenomena attending the more or less liberal use of alcohol are neither confined to the ingestion of this product alone nor universally or invariably obtained. There are too many variables in such reactions to permit mathematical precision of occurrence. These newer statistical indications, however, clearly conform to the generality of other evidence in placing the burden of defense on the regular use of so-called alcoholic stimulants.

1. New Evidence Against Alcohol, editorial, THE JOURNAL A. M. A., March 4, 1916, p. 742.
2. Lattimer, T.: Ueber die Einwirkung der kleinsten Alkoholmengen auf die Wiederstandsfahigkeit des tierischen Organismus mit besondere Berücksichtigung der Nachkommenschaft, Ztschr. f. Hyg. u. Infektionskrankh., 1907-1908, lviii, 139.
3. Parkinson, P. R.: The Relation of Alcohol to Immunity, Lancet, London, 1909, vii, 1580.
4. Reich, H. W.: Ueber den Einfluss des Alkoholgenusses auf Bakterizidie, Phagozytose und Resistenz der Erythrocyten, beim Menschen, Arch. f. Hyg., 1916, lxxxiv, 337.

HEXAMETHYLENAMIN AND URIC ACID

If further evidence were necessary to show the futility of administering formaldehyd derivatives like hexamethylenamin as uric acid solvents, it could be found in the observations recorded by Haskins[1] under the auspices of the Committee on Therapeutic Research of the Council on Pharmacy and Chemistry. It is true that a solution of formaldehyd is a solvent for uric acid, and likewise that hexamethylenamin, which will liberate formaldehyd in acid solutions, has a similar solvent power. These are facts elicited from a study of pure solutions of the respective substances in the test tube. As the "Pharmacology of Useful Drugs" [2] has expressed it, however, it is one thing to hold a substance in solution or prevent its precipitation when one uses a concentrated solution of formaldehyd, and quite another matter to dissolve calculi in weak solutions, such as one may see in urine. Haskins has found that the power of urines containing hexamethylenamin to take up uric acid in addition to that already present varies with the specimen examined; in any event, however, those which exhibit an enhanced solvent power are such as correspond in their acidity reaction with normal urines which have the ability to dissolve uric acid in appreciable quantity. The hydrogen ion concentration is the dominant index in the matter. It is freely admitted that perhaps after administration of excessive doses of the drug certain portions of the secreted urine may contain a sufficient concentration of it to impart to them a uric acid solvent power greater than the same urines would otherwise manifest. But, as Haskins points out, this is scarcely of therapeutic value; for the required dose of hexamethylenamin is too large, and an equal or better effect can be produced more readily by administration of alkaline diuretics of sodium bicarbonate in reasonable quantities. Even a suitable choice of diet, as Blather-

1. Haskins, H. D.: The Uric Acid Solvent Power of Urine Containing Hexamethylenamin (Urotropin) as Compared with that of Normal Urine, Arch. Int. Med., December, 1915, p. 1055.
2. Hatcher, R. A., and Wilbert, M. I.: Pharmacology of Useful Drugs, Chicago, American Medical Association, 1915, p. 164.

wick[3] has shown, will accomplish the same end. There is no longer a valid reason why practitioners should show the slightest deference to the assumed superior solvent virtues of the formaldehyd-hexamethylenamin combinations under whatever guise they may be offered.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Medical Care of Delinquent and Neglected Children.—Bills now pending in Congress for the reorganization of the Juvenile Court make it the duty of the parent, guardian or custodian of any child within the jurisdiction of the court to cause such child to be examined by a duly licensed and practicing physician, if the child appears to be in need of medical care, either before or after hearing. On the failure of the parent, guardian or custodian, the court may by proper order cause such an examination to be made. A report of the examination must be made to the court. In order that such a child may receive such examination and care as its welfare may require, the court may cause the child to be treated in a hospital. A clause requiring every official of the District to render to the court such assistance and cooperation as may be within his jurisdictional power will give the court the benefit of the services of the District alienist for such psychopathic investigations as may be necessary.

Object to Use of Hospital Site.—Owners and occupants of dwellings that have been constructed around the 40-acre site for a municipal hospital since it was purchased by the District government for that purpose some years ago are protesting against its use for hospital purposes. The proposed hospital is classed as a potential danger to the community because it will harbor a large number of mental suspects, human derelicts and patients suffering from contagious and loathsome diseases. The presence of the institution will, it is claimed, produce a constant feeling of gloom on all who must pass by or live near it. The use of the streets leading to the hospital by ambulances and police patrol wagons is objected to. The discharge of cured patients at the doors of the institution, leaving them to find their ways back to their places of residence, is looked on as liable to cause trouble. The use of street cars by persons visiting the inmates will, it is said, interfere with the use of the cars by persons living in the neighborhood. It is proposed to carry the fight against the use of the site to Congress, which controls the matter.

Proposed Sanitary District for Maryland and the District of Columbia.—In order that the drainage from certain areas in Maryland adjacent to the District of Columbia may be disposed of safely and economically and without polluting streams flowing through the District, the legislature of Maryland is considering a bill providing for the appointment of a commission to take the matter in charge. The commission is to make surveys and divide the area within its jurisdiction into drainage districts. On determining which of these districts is most in need of sewerage and drainage facilities and of a water supply, the commission is to perfect detailed plans and specifications for the necessary work, with an estimate of the cost, and to publish these data in the county newspapers. The boards of supervisors of elections of the various counties affected by the proposed plan must on request of the drainage commission call elections to determine the will of the people with respect to the matter. If a majority vote in favor of the project the county commissioners may then sell bonds to cover the cost of the undertaking, and the work may be proceeded with. The drainage commission is authorized to enter into an agreement with the proper authorities of the District of Columbia for the emptying of Maryland sewers into and through those of the District of Columbia, and vice versa.

3. Blatherwick, N. R.: The Specific Rôle of Foods in Relation to the Composition of the Urine, Arch. Int. Med., September, 1914, p. 409.

Medicinal Use of Alcoholic Liquors in the District of Columbia.—To meet objections to the proposed prohibition law for the District of Columbia, raised by the Medical Society of the District, Senator Sheppard of Texas, who is the sponsor for the proposed law, has given notice of his intention to offer certain amendments. Under these amendments a retail druggist may sell alcoholic liquors, which he could not do under the original bill. Each sale, however, must be covered by a written and bona fide prescription. The prescription must contain a statement that the disease of the patient requires such prescription and it must be canceled when filled. The druggist must keep a record of all sales, in which the purchaser must sign his name. Ethyl alcohol may be sold without a prescription, but sales must be recorded in the same manner as sales of alcoholic liquors. Malt extracts and other proprietary medicines containing alcohol may be sold without prescription or record if they are so medicated as to be medicinal preparations or compounds unfit for use as beverages. No physician may prescribe any alcoholic liquor except for treatment of disease which, after his own personal diagnosis, he deems to require such treatment. In addition to punishment by fine and imprisonment, it is provided that in case of second conviction the license of the physician or of the pharmacist to practice his calling shall be revoked.

ILLINOIS

Society Discusses Public Health Legislation.—At the March meeting of the Whiteside County Medical Society held in Sterling, March 16, Dr. George T. Palmer, Springfield, under the auspices of the state board of health, gave an address on "Public Health Legislation in Illinois." In addition to the members of the society, county, town and city officials were present at the meeting.

Personal.—Dr. Jacob J. Mendelsohn has resigned as resident physician of the St. Charles School for Boys and will resume private practice in Chicago.——Dr. Flint Bondurant, Cairo, has been appointed physician for the Children's Home, succeeding Dr. John J. Rendleman, Cairo, who has acted in that capacity for twenty-five years.——Dr. George P. Gill, Rockford, gave an interesting account of his experiences in the war zone before the University Club, Rockford, March 9. ——Dr. Heber Robarts has been elected president of the Safety First Society of Belleville.——A luncheon was given at the Monroe Center Hotel, March 8, in honor of Dr. Henry G. Davis, who is about to leave on an extended trip to Alaska.——The home of Dr. James J. Moran, Spring Valley, was destroyed by fire, March 8, with a loss of between $8,000 and $10,000.——Dr. Clarence M. Cheadle, Rockford, has given several lectures on conditions in Serbia recently.—— Dr. Clesson C. Atherton, assistant superintendent of the Watertown State Hospital, who has been transferred to the Jacksonville State Hospital, was given a farewell entertainment, February 28, at which Dr. Joseph A. Campbell, superintendent of the institution, presented Dr. and Mrs. Atherton with a handsome silver service, a gift from the employees. ——Dr. Edward A. Foley of the Jacksonville School for the Deaf has been appointed assistant superintendent of the Watertown State Hospital.

Chicago

Billings Received Harvard Appointment.—Dr. Frank Billings has been appointed visiting lecturer on medicine at Harvard University.

Tribute to Favill.—Members of the National Dairy Council, representing every branch of that industry, held a memorial meeting at the Hotel Sherman, February 28, to pay tribute to their late president, Dr. Henry Baird Favill.

Save the Sight of Babies.—This is the motto of a campaign which is to be inaugurated with a mass meeting in Fullerton Hall Art Institute, March 31, under the auspices of the Illinois Association for the Prevention of Blindness. Drs. Frank Cary, Edward V. L. Brown and Thomas A. Woodruff are members of the executive committee of the association.

Memorial to Student.—Medical students of the University of Chicago and Rush Medical College are cooperating in a plan to establish a research scholarship in the University as a memorial to Henry Ginsburg, an alumnus of University of Chicago of 1914, and a member of the senior class of Rush Medical College who died at Michael Reese Hospital, March 9. It is planned to raise $1,500 for the endowment of this scholarship.

Another Typhoid Source.—The health commissioner announces that the insanitary condition of the grounds of the South Shore Country Club may have been in part responsible for the epidemic of typhoid fever in the section supplied by the Sixty-Eighth Street pumping station. There is said to be a building on the club grounds containing two shower baths and three toilets which have no connection with any sewer. This building is within 100 feet of one of the principal intake wells of the pumping station.

Chicago Men Make Addresses.—Dr. Dean DeWitt Lewis was the guest of honor and delivered an address before the Calhoun County (Mich.) Medical Society at Battle Creek, March 7.——Drs. Arthur Dean Bevan and Lewis L. McArthur delivered addresses before the Los Angeles County (Calif.) Medical Association, March 2. Dr. Bevan's subject was "Obsessions in Surgical Practice," and Dr. McArthur spoke on "Thrombo-Angiitis Obliterans."——Dr. Albert E. Halstead spoke before the Muskegon-Oceana County (Mich.) Medical Society, March 1, on "Clinical Significance of Increased Intercranial Pressure."——Dr. Benjamin F. Lounsbury addressed the Linn County (Iowa) Medical Society at Cedar Rapids, March 1, on "Fracture of the Os Calcis."——Dr. Clifford G. Grulee delivered the principal address at the sixteenth annual banquet of the Phi Rho Sigma National Medical Fraternity in Omaha, February 26.

Personal.—Dr. Theodore B. Sachs resigned as president and a member of the board of directors of the Chicago Municipal Tuberculosis Sanatorium, March 20. In his letter to the mayor, Dr. Sachs expresses his opinion that "after ten months' experience with the present administration continuance of efficient service, under the present conditions is practically impossible."——Dr. Fred C. Zapffe has resigned as secretary of the Chicago College of Medicine and Surgery. ——Dr. H. Wernicke Gentles, head of the First Aid Department of the Chicago Section of the American Red Cross, will conduct a class in first aid work at the University of Chicago during the spring quarter, under the auspices of the College Y. M. C. A.——Dr. and Mrs. Arthur Dean Bevan have returned after a trip to the Pacific Coast.——Dr. Edward K. Armstrong has been appointed a member of the pediatric staff of Cook County Hospital, succeeding Dr. Joseph Brennemann, resigned.——Dr. Nelson H. Lowry is ill at his home with scarlet fever.——Dr. and Mrs. E. Wyllys Andrews have returned from Florida.——Dr. Georgiana M. D. Theobald, as the result of a recent state civil service examination, has qualified for the position of pathologist at the Illinois State Eye and Ear Infirmary.

INDIANA

New Buildings at Epileptic Villege.—The Indiana Village for Epileptics, near Newcastle, is to open two new buildings for men. An appropriation has been made by the state for buildings for women, but it will be a year or so before these are completed. The superintendent is seeking a list of all the epileptics in the state with a view to their transfer to the new institution.

Sanitary Survey of Summer Resorts.—During the coming summer the water department of the Indiana State Board of Health will conduct a sanitary survey of the summer resorts of the state. The frequency of typhoid fever, following the return of persons from summer resorts, has led the board of health to believe that there must be some item of summer life which is not of the highest standard from a sanitary viewpoint.

Personal.—Dr. George B. Hoopingarner, secretary of the board of health, Elkhart, tendered his resignation after formal action by the two other members of the board to force him to resign. The mayor charged him with various omissions of duty.——Dr. Jesse L. McElroy, Darlington, has resigned as house physician to the State Hospital, Indianapolis, and has been succeeded by Dr. Frederick E. Jackson. ——Dr. Walter B. Christophel, Mishawaka, was seriously injured by the overturning of his automobile, February 21.

Conference of Charities.—The National Conference of Charities is to be held in Indianapolis, May 10-17. Among the names appearing on the program are: Dr. John N. Hurty, secretary of the state board of health, Indianapolis; Dr. Charles S. Woods, superintendent of the Methodist Hospital, Indianapolis; Dr. Fred Henshaw, dean of the Indiana Dental College, Indianapolis; Prof. L. J. Rettger of the State Normal at Terre Haute; Dr. David C. Peyton of the Indiana Reformatory; Dr. Samuel E. Smith of the Eastern Hospital for the Insane, Richmond; Dr. Juan B. Guiteras, director of the National Hospital and professor of medicine, National University, Havana, Cuba, and Dr. Eugene L. Fisk, director of hygiene, New York.

Food, Drug and Sanitary Inspectors Meet.—The final session of the conference of the state, county and city food, drug and sanitary inspectors was held, March 16, at Indianapolis. Dr. Herman G. Morgan, city sanitarian, discussed the diseases that may be spread by the milk supply of a city. Dr. John N. Hurty, state health commissioner, spoke on the subject of "How Local Officials May Cooperate with the State Board of Health." Dr. G. W. Butler, chief of the federal meat inspection work in Indiana, discussed the meat inspection work. It was decided to organize a permanent association. Dr. Herman G. Morgan, Indianapolis, was elected president; A. W. Hedrich, Chicago, vice president, and Harry S. Truitt, Columbus, secretary.

IOWA

Hospital News.—A new hospital will be erected in Estherville in the early spring by Miss Josepha Roberts. The building will cost about $7,000, will accommodate twenty patients, and will be under the charge of Drs. Albert Anderson and Raymond C. Coleman.——The state board of control has let the contract for the construction of an additional building at Oakdale, the State Tuberculosis Sanatorium, to a Cedar Rapids firm for $58,600. The new building will be four stories in height, fire proof, and will provide quarters for sixty additional patients.——Dr. Lynn L. Lorenz has leased the May Hospital, Charles City.——The Marengo Hospital will be ready for occupation about April 1.

Personal.—Dr. and Mrs. William L. Allen, Davenport, have returned after a six weeks' trip to the Pacific Coast.——Dr. Royal C. Danley, Hamburg, fractured his collar bone and suffered severe bruises by the overturning of an automobile near Shenandoah, March 9.——Dr. Michael A. Cunningham, surgeon to the State Sanatorium, Oakdale, has been made assistant superintendent of the institution.——Dr. Oliver S. Barber, Creston, has been appointed postmaster of that city. ——Dr. Campbell P. Howard, Iowa City, delivered an address before the Des Moines Pathological Society, February 25, on "Medical Aspects of the War in France."——Dr. Will D. Runyon, assistant superintendent of the State Sanatorium, Oakdale, has been appointed resident physician in the National Printers' Home, Colorado Springs, Colo.—— Dr. John Henkin has resigned his position in the children's department of the University of Iowa Hospital, Iowa City, to become an intern in Cook County Hospital, Chicago.

KANSAS

State Society Meeting.—The annual meeting of the Kansas Medical Society, which will also celebrate its semicentennial on this occasion, will be held in the Memorial Hall, Topeka, May 3 to 5. Among the speakers already secured from outside the state are Drs. George W. Crile, Cleveland, and Fred H. Albee, New York.

Dispensary Moved.—The free dispensary of the Bell Memorial Hospital, Rosedale, has moved into new quarters and a new schedule is in operation. In the morning from 10 to 12 o'clock, medical, surgical and eye cases will be treated, and the afternoon from 2 to 4 will be devoted to diseases of women and children, skin diseases, and diseases of the nose, ear and throat.

Personal.—Dr. Samuel Adams, Niles, has been appointed assistant surgeon of the Soldiers' Home, Leavenworth.—— Dr. John W. C. Boone, assistant surgeon at the State Soldiers' Home, Leavenworth, has resigned, to take effect April 5.——Dr. Jacob R. Pierce has resigned as surgeon of the Soldiers' Home and has been succeeded by Dr. S. Clifford Cox, Washington, D. C.——Dr. Henry W. Nye, Osborne, has been appointed local surgeon for the Salina Northern Railroad. ——Joseph T. Lovewell, Ph.D., for eleven years secretary of the State Academy of Sciences, and for twenty-one years professor of physics and chemistry in Washburn College, Topeka, has announced that he will retire from the public service, July 1.

LOUISIANA

Physician Wins Suit.—A jury in the district court at Baton Rouge, in a suit brought by Dr. Robert C. Kemp against Stephen P. Schuesster for $261.10 for professional services rendered the defendant's wife, rendered a verdict in favor of Dr. Kemp.

Dowling Initiated as Honorary Member of Fraternity.—Dr. Oscar Dowling, president of the state board of health, was initated, March 18, as an honorary member of the Alpha Beta Chapter of the Phi Beta Pi Medical Fraternity, located at Tulane University. Addresses were made by Drs. Homer J. Dupuy, Jr., and Henry W. E. Walther.

Transfer of Quarantine.—Mayor Behrman of New Orleans states that there has been little opposition to the Estopinal Bill, which makes an appropriation of $300,000 for a new quarantine station inside the city limits of New Orleans. Options have been secured on a tract of land on the Algiers side of the river for the quarantine station, and the transfer at an early date seems assured.

New District Society.—The first semiannual meeting of the recently organized Fourth District Medical Society, which includes the Bienville, Bossier, Caddo, Claiborne, DeSoto, Red River and Webster parishes, will be held in Shreveport, March 23. Dr. Clifford H. Iron, Benton, is president of the association; Drs. Clarence E. Edgerton, Coushatta, and John L. Kimbell, Shreveport, are vice presidents, and Dr. A. A. Harold, Shreveport, is secretary-treasurer.

MARYLAND

New Home for Hospital.—The Baltimore Skin and Cancer Hospital has recently purchased a new home on Greenmount Avenue, and proposes at an early day to establish a free dispensary in connection with the institution.

Personal.—Drs. Stewart Vernon Irwin and Jerome Pierce Webster of the staff of the Johns Hopkins Hospital have been named and now are on their way to Berlin to make a scientific examination of conditions prevailing at the great prison camps in Germany. They will report to the American Red Cross headquarters at the American Embassy.——Dr. Charles Wellman Mitchell, former dean of the medical school of the University of Maryland and a leading specialist of Baltimore in children's diseases, is very ill with pneumonia at his home.——Dr. J. McPherson Scott, mayor of Hagerstown, is seriously ill with pneumonia.——Dr. Arthur M. Shipley entertained the members of this year's graduating class of nurses and the resident physicians of the University Hospital recently at his home in Baltimore.——Dr. John F. Spearman, formerly of the staff of Mercy Hospital and now engaged in surgical work at that hospital and at the United States Marine Hospital, spoke before the members of the Medical Society of the University of Maryland and the College of Physicians and Surgeons. His address was illustrated with photographs, and entitled "Incidents of Service with the American Red Cross in Europe." Other speakers at the meeting were: Drs. E. F. Greutzner, Robert P. Bay, Harvey G. Beck and Standish McCleary. Dr. Albert H. Carroll was chairman and Dr. Alexius McGlannan, secretary. ——Dr. Frank W. Keating, superintendent of the Rosewood State Training School, at Owings Mills, recently underwent operation for appendicitis at the University of Maryland Hospital, and is reported to be improving rapidly.

MICHIGAN

Personal.—Dr. Frank W. Shumway, Lansing, has been appointed a member of the State Pardons Board, succeeding Dr. John C. Brown, Battle Creek, term expired.——Dr. Heinrich A. Reye, for two years a member of the medical staff of the Pontiac State Hospital, has resigned.——Dr. Emory J. Brady, assistant medical superintendent of the Traverse City State Hospital, has accepted the superintendency of a sanitarium in Colorado Springs, Colo.——Dr. Don M. Griswold, formerly chief of the Detroit board of health laboratories, is reported to be ill with tropical fever in Trinidad.

Scarlet Fever Prevalent.—A survey of Muskegon, Newaygo and Oceana counties for scarlet fever has been ordered by the secretary of the state board of health. Dr. George S. Williams, Muskegon, will be in charge of the survey. The epidemic is reported to be due largely to laxity of quarantine and the failure of local health officers thoroughly to grasp the conditions facing them. It is reported to be preliminary to a state-wide campaign against disease.——The Muskegon Employers' Association has officially tendered its support and cooperation to the health authorities in their fight against scarlet fever.——During January and February, 1916, 1,188 cases of scarlet fever were reported to the state board of health, nearly double the number reported during the same period of 1915.

MINNESOTA

Children's Hospital Needed.—Directors of the Charles T. Miller Hospital, St. Paul, for which $1,750,000 was bequeathed by Mrs. Miller, may be asked to apply the bequest to build a children's hospital, which is much needed in the city.

Health Advertisements.—The Street Railway Company of Minneapolis has donated advertising space in its cars for six weeks to the Public Health Committee of the Civil and Commerce Association. Cards will be placed in the cars giving advice regarding personal health and public sanitation.

Public Health Association Work.—The people of the state contributed liberally to the Red Cross Christmas seal campaign, raising $30,120 for the fund, or an increase of more than 50 per cent. over the previous year. Of this amount, $13,000 is to be applied to the public health propaganda for the state.

Communicable Diseases.—Dr. E. A. King, Minneapolis, has been temporarily appointed an assistant in the city health department during the prevalence of measles. Measles is reported to be very prevalent in Duluth. Special contagious disease inspectors have been appointed to assist in stamping out the infection. There are believed to be about 500 cases in the city.

Hospital News.—The contract for a new addition to the State Hospital has been awarded to Mankato contractors. The new hospital will accommodate seventy patients.—— The Eudestine Sisters have acquired the property of the North Minnesota Hospital, International Falls. The institution has accommodation for fifty patients.——A movement has been initiated at Barnesville to establish a hospital in that village.

Visiting Nurses.—The Minnesota State Public Health Association has employed two nurses to spend about one month in each community. They report that in cities of about 3,000 one nurse could be kept busy almost the entire year for the schoolchildren alone. In Worthington, for instance, with a population of 2,800, 25 per cent. of the children have defective vision, 20 per cent. defective hearing and 95 per cent. need the attention of dentists. Similar findings were reported at Montividego.

Sanatorium News.—In the Marshall-Roseau County Sanatorium matter, in which there was dissension over the selection of a site, Roseau County has declared its intention to withdraw from the agreement and it is now proposed to unite Marshall and Pennington counties in this project, with Thief River Falls as a site for the sanatorium.——The Aikin-Crow Wing County Tuberculosis Sanatorium Association has decided on the erection of a sanatorium on the site of the former fish hatchery of Crow Wing County near Deerwood at a cost of $30,000. The sanatorium will accommodate thirty-five patients.

Personal.—Dr. Joseph A. Gates, Kenyon, a member of the legislature from Goodhue County in 1905, 1907 and 1909, announces his candidacy for lieutenant-governor of the state. ——Drs. Edward E. Webber and Edward H. Nelson are rival candidates for president of the village of Chisholm.—— Dr. Arthur E. Benjamin, Minneapolis, has been elected president, and Dr. Ernest Z. Wanous, secretary-treasurer of the McLeod County Association of the Twin Cities.——Dr. Samuel H. Boyer, Duluth, has been appointed a member of the State Board of Medical Examiners, succeeding Dr. Frank B. Hicks, Grand Marais, term expired.

MONTANA

Personal.—Dr. Thomas A. MacKenzie, Miles City, has started for Calgary to report for duty for overseas service with the Canadian forces.——Dr. Clarke S. Smith, Kalispell, a member of the Chicago unit, has returned from service in Northern France, about forty miles from Ypres.

Hospital News.—A new fireproof hospital, four stories in height, 150 by 40 feet, is to be built in Missoula by the Northern Pacific Beneficial Association.——Work will soon be commenced on the additions to the State Tuberculosis Sanitarium, Galen, for which $20,000 was appropriated by the last legislature. The additions will increase the capacity of the institution by thirty patients. A dining room, kitchen and hospital pavilion will also be built.

NEBRASKA

New Officers.—Johnson County Medical Society at Tecumseh, February 23: president, Dr. Dora M. Judkins-Davies; vice president, Dr. Joseph M. Curtis, and secretary-treasurer, Dr. Truman E. Fairall (reelected), all of Tecumseh.

Personal.—Dr. John H. Vance, Omaha, who has been seriously ill with septicemia, is reported to be convalescent.—— Dr. William D. Guttery, superintendent of the Nebraska State Hospital, Norfolk, has been permanently suspended and has returned to his old home in Pilger. Dr. Harry R. Carson is temporarily acting as superintendent.

NEW YORK

New State Secretary Appointed.—At a meeting of the Council of the Medical Society of the State of New York, March 15, Dr. Floyd M. Crandall was appointed secretary to fill the vacancy caused by the death of Dr. Wisner R. Townsend.

Incorporate for Study of Tuberculosis.—The Association for the Promotion of Medical Research for the Prevention and Cure of Tuberculosis was incorporated, March 12. The chief office of this organization will be in Manhattan, but its field of labor will include the entire United States. It proposes to establish professorships and scholarships in medical schools, and to maintain institutions for the treatment of tuberculosis.

Would Aid State in Establishing Psychopathic Institution.—At a hearing on the Wheeler bill, March 15, Dr. Max G. Schlapp stated that a donor who did not wish his name divulged had offered $500,000 toward a psychopathic institution provided the Wheeler bill was passed by the legislature. This bill would create a state clearing house for the mentally deficient and would create a commission of seven with an executive manager to supervise the work of examining and diagnosing the cases of the mentally deficient and to investigate the causes of mental deficiency. No one opposed the bill.

Anthrax.—The Division of Industrial Hygiene of the State Industrial Commission has been investigating cases of anthrax which have developed in the state. During the last year, in the upper district of New York, eleven cases occurred in human beings, seven of which developed in tannery workmen, three among farmers and one in a schoolboy. Of these cases, four proved fatal. The appearance of the disease appeared after the handling of Chinese and South American hides. The medical inspector states that "the confiscation and destruction of infected hides of carcasses of domestic animals and the preclusion from commerce of imported spore-bearing skins, are the only means of combating anthrax which is at our disposal."

Mohansic Hospital Plan Abandoned.—Governor Whitman and legislative leaders, after a conference on March 17, decided that some sort of measure providing for the abandonment of Mohansic State Hospital and the Yorktown Heights Training School for Boys on the Croton watershed should be put through at the present session of the legislature. The question that remains to be decided is the terms on which this abandonment should be taken, some holding out that the city should reimburse the state for the money spent there since the reason for abandoning the institution is that it menaces the purity of the water supply of the city, and a former bill providing for abandonment was vetoed by Governor Glynn at the request of the mayor of the city.

New York City

A New Eye Clinic.—The West Side German Hospital and Dispensary opened its eye clinic, March 15. Dr. Alfred H. Riedel is chief of clinic.

Personal.—Dr. John E. Daugherty has been appointed medical superintendent of the Greenpoint Hospital, Brooklyn, to succeed Dr. Charles F. Sanborn.

Decennial Celebration of Society.—The Williamsburg Medical Society will celebrate its decennial by a banquet and entertainment given in honor of Dr. Abraham Jacobi, April 14, at Willoughby Mansion, Brooklyn.

Harvey Society Lecture.—The ninth lecture under the auspices of the Harvey Society, delivered at the New York Academy of Medicine, March 25, by Dr. Rollin T. Woodyatt, University of Chicago, was on "Intermediate Carbohydrate Metabolism."

Memorial Tablets Unveiled.—Memorial tablets to Dr. Abram Brothers and Dr. Archibald Isaacs, lately members of the medical staff of Beth Israel Hospital, were unveiled and dedicated at that hospital on Sunday, March 12, with appropriate ceremonies.

The Pilcher Semicentennial.—The Lewis Stephen Pilcher semicentennial will be celebrated May 11, 12 and 13, with a program consisting of public clinics and a public banquet on the evening of May 12. This celebration will be of not only national but international significance.

Memorial to Dr. O'Connell.—The last report of the late Dr. J. O'Connell, as health officer of the port, is to be printed and circulated to the extent of a thousand copies, as a memorial to his work during his term of office. The senate passed a resolution authorizing the printing, March 16.

Memorial Hospital at Irvington.—Mrs. Isaac L. Rice has purchased about 14 acres of land on Broadway, Irvington, N. Y., known as the Guiteau estate, as a site for the million dollar memorial hospital to be erected in honor of her husband. The nucleus of the institution will comprise four buildings, the main structure containing 100 beds and a number of private rooms. The hospital will be allied with the Beth Israel Hospital, and will be especially for persons suffering from nervous breakdown.

Preparing for Mosquito Campaign.—It has been announced that the week beginning May 1 will be designated "mosquito week," when special efforts will be made to exterminate the pests and do away with mosquito-breeding collections of water. In preparation for this campaign the board of health will breed a colony of mosquitos for purposes of experiment and demonstration in the public schools, hoping in this manner to familiarize the pupils with the requirements and habits of the mosquito and to interest them in its extermination.

For Drug Addicts.—The Board of Inebriety has, with the aid of the Commissioner of Charities, obtained additional facilities for the treatment of drug addicts at the City and Kings County hospitals. These hospital facilities, in addition to the hospital and industrial colony for inebriates at Warwick, N. Y., where construction is under way which will provide accommodations for 300 inmates, will make possible for these drug habitués a continuity of skilled treatment and proper control until they are ready to be returned to the city.

Hospital and School for Defective Children.—Commissioner of Charities John A. Kingsbury has announced that an initial appropriation of $600,000 has been made to start the work of rebuilding and reorganizing the New York City Child's Hospital and Schools on Randall's Island, where the city's mentally deficient children are housed, and that it is understood that $1,000,000 more will soon follow. He also announces that the name will be changed so that New York may forget the archaic institution and think of a modern and well-equipped institution for the care of mentally defective children. There are at the present time about 2,000 defectives and defective delinquents in the institution. It is estimated that there must be 120,000 defectives in the city.

Lectures on Military Administration.—A course of six lectures on military administration, medical and surgical, will be given at the College of Physicians and Surgeons in the City of New York on Tuesdays at 5 p. m., beginning March 28. These lectures will be opened to the general medical public as well as to the students. The schedule is as follows:

March 28: "Organization, Equipment and Training of Armies," Lieut. Col. William S. Terriberry, M. C., N. Y. N. G.
April 4: "Organization of the Medical Department, and Its Service in Campaign," Major Joseph H. Ford, M. C., U. S. Army.
April 11: "Wounds in War, their Complications and Treatment," Major Joseph H. Ford, M. C., U. S. Army.
April 18: "The Personal Hygiene of the Soldier," Major Sanford H. Wadhams, M. C., U. S. Army.
April 25: "Camp Sanitation," Captain Philip W. Huntington, M. C., U. S. Army.
May 2: "Preventable Diseases in War," Captain Philip W. Huntington, M. C., U. S. Army.

Activities of the Health Committee of the Academy of Medicine.—The Public Health Committee of the New York Academy of Medicine has issued a leaflet containing a summary of its activities during January and February. These include the recommendation of the transfer of quarantine to federal control; the matter of social health insurance, including provision of periodic medical examinations; the supplying of medical, surgical and nursing aid; the cooperation with state and local health authorities; the utilization of existing dispensaries for the administration of medical benefits; the arrangement for medical and surgical care where no dispensaries exist; the construction of a contagious disease hospital in the Bronx; a study of the present facilities for diagnosis of suspected cancer tissue; a fifth medical year; the study of hospital standards, their efficiency and relation to medical examination; the Gary plan of school instruction; the question of street accidents, overcrowding of infants' wards and institutions; standardization of commercial diagnostic laboratories; legislation with reference to "patent

medicines," and medical advertisements and the concentration of activities within the department of education.

Clinic for Pay Patients at Mt. Sinai Hospital.—A clinic for pay patients has been proposed to be conducted by the Mt. Sinai Hospital in connection with a group of specialists. This clinic is for the use of ambulant patients in moderate circumstances that they may be able to consult reliable specialists without being compelled to pay office fees beyond their means. The purpose of the clinic is to confine its aid to persons having incomes of $1,200 a year or less. The patients will be admitted on week days from 7:30 to 9 p. m. There will be a registrar who will receive applicants or reject applicants not eligible for treatment, keep the records of the clinic, and collect and account for the fees. The hospital contributes the use of its dispensary building and equipment; all earnings and necessary expenditures will be divided among the members of the medical staff in proportion to their hours of attendance. The standard fee for routine or office consultation will be $1. Medicine will not be furnished by the clinic and a moderate extra charge will be made for Roentgen ray work or any other unusual laboratory investigation. The members of the staff will be prepared to see patients of the clinic in consultation with general practitioners. The fees to be charged for this work will be agreed on by the practitioner presenting the case and the clinic physician consulted, and should ordinarily not exceed $2 or $3.

PENNSYLVANIA

Personal.—Dr. Zachariah C. Myers, York, was elected president of the Pennsylvania branch of the General Alumni Association of the University of Maryland at its annual meeting in Philadelphia.——Dr. Elmer E. Bush, Danielsville, has been appointed district surgeon for the Lehigh and New England Railroad.——Dr. John C. Miller, Shenandoah, has returned after a year of Red Cross work in Europe.

Philadelphia

Personal.—Dr. Ernest LaPlace has been appointed professor of surgery in the Medico-Chirurgical College of Philadelphia, succeeding the late Dr. William L. Rodman. ——Drs. William K. Mueller, chief medical examiner, and Dr. Clinton J. Foltz, assistant medical examiner, severed their connection with the Civil Service Commission, March 15, when the new ordinance became effective.——Dr. John P. Bethel has been appointed first assistant bacteriologist in the bureau of health.——Dr. Powell P. Fenton, who has been on duty with the ambulance service in the French army, has been awarded the Cross of War by the French government for distinguished and meritorious service.——Dr. Francis V. Gowen sailed from New York for Bordeau, March 10, on the *Chicago*. He will be attached to a military hospital at Beaumont, Perigord, France.

Honor to Rodman.—The Philadelphia County Medical Society, at its meeting, March 8, adopted resolutions setting forth the high esteem and great worth of the late Dr. William L. Rodman as an author, teacher and surgeon, and placing on record its high appreciation of his professional attainments and manly character.——The funeral of Dr. Rodman was held from his house, March 10, and services were held at the Second Presbyterian Church, and the body was taken to Frankfort, Ky., for interment. The pallbearers were Surg.-Gen. William C. Braisted, U. S. Navy; Surg.-Gen. William C. Gorgas, U. S. Army; Surg.-Gen. Rupert Blue, U. S. P. H. S.; Col. Louis A. LaGarde, M. C., U. S. Army, retired; Capt. Hugh Rodman, U. S. Navy; Drs. L. Webster Fox and Joseph W. Holland, Philadelphia, and Dr. William B. Coley, New York.

TEXAS

Dispensary Established.—A free medical dispensary was opened in the basement of the Abilene County Courthouse, Abilene, March 6, under the auspices of the Women's Federated Clubs of the city. The free clinic for white women has been established at the John Sealy Hospital. The clinic will be open from 12 to 1 p. m. every day. A woman physician will be in charge on Tuesdays, Thursdays and Saturdays, and a male physician on the other three days of the week.

State Board Happenings.—Dr. Arthur McElhannon, Sherman, has been appointed a member of the State Board of Medical Examiners, vice Dr. Milton P. McElhannon, Belton, resigned.——At the annual meeting of the board, held in Temple, March 5, S. L. Scothorne, Dallas, was elected president; Dr. John S. McCelvey, Temple, secretary-treasurer; Dr. Horace C. Morrow, Austin, vice president; Dr. John H. McLean, Fort Worth, chairman of the college committee; Dr. Thomas J. Crowe, Dallas, chairman of the executive committee, and H. B. Mason, Temple, chairman of the reciprocity committee.

Health Work Demonstration.—The Texas State Board of Health has adopted the plan of demonstration of public health work. Three demonstration districts have been selected in Leon, Harrison and Polk counties, and every feature affecting the health of the inhabitants of these districts will be studied. This intensive health work begins with a series of lectures on prevention of illness delivered in every locality in the county. A sanitary survey will then be made, a laboratory established, a house-to-house canvass made, homes and public buildings inspected and all sanitary conditions pointed out, the schoolchildren inspected for physical defects, lectures on preventive diseases will be given, and during the last week of the campaign carpenters will be secured, houses screened and sanitary privies constructed. This campaign is under the direction of Dr. Platt W. Covington of the International Health Commission, working under the auspices of the state board of health.

GENERAL

The Wine of Cardui Suit.—As we go to press the jury in the suit of the Chattanooga Medicine Co. vs. the American Medical Association and the editor of THE JOURNAL is being impanelled.

The President to Regulate Sanitation in the Canal Zone.—The president will be authorized, if a bill recently introduced by Representative Britten of Illinois becomes a law, to make rules and regulations in matters of sanitation and quarantine and regulations of a police nature for the Canal Zone.

Ill with Typhus in Mexico.—Drs. Carlos Husk and Peter K. Olitsky, members of the expedition sent by the Rockefeller Foundation to combat typhus fever, became ill with typhus fever at Nuevo Laredo, Mexico. It is reported that the condition of Dr. Olitsky is improved. Dr. Husk died March 20.

Medical, Scientific, Educational and Philanthropic Institutions Not to Be Affected by Fixed Price Legislation.—A bill has been introduced into Congress by Senator Ashurst of Arizona, providing a method whereby a grower, producer, manufacturer or owner of an article under a trade-mark or special brand, who sells it to a dealer, can prescribe the price at which it shall be resold, the object being to prevent cut prices. It is expressly provided, however, that the act shall not apply in cases of sales of such articles to any society or institution established solely for educational, medical, scientific or philanthropic purposes.

Oppose Whitman's Plan.—Governor Whitman's plan to turn over the office of health officer of the port of New York to federal authorities is apparently facing defeat in the legislature as the senate finance, and assembly ways and means committees have failed to take any action on the administration bills clearing the way for this transfer, and as the finance committee has thus far refused to report the governor's nomination of Assistant Surg.-Gen. Leland E. Cofer, U. S. P. H. S., temporarily to succeed the late Dr. Joseph O'Connell, Brooklyn, as health officer. Dr. Cofer was nominated merely to fill the unexpired term of Dr. O'Connell.

Viruses, Serums, Toxins and Analogous Products for Use in the Treatment of Domestic Animals to Be Better Supervised.—A comprehensive bill to regulate commerce in and importation of viruses, serums, toxins and analogous products for use in the treatment of domestic animals has been introduced into Congress by Representative Steele of Iowa. If enacted in its present form domestic animals will have better legal protection against danger from the class of remedies named than will human beings, unless in the meantime there should be similar legislation for the protection of the humans. The execution and enforcement of the law will be under direction of the secretary of agriculture.

Social Hygiene.—The prize of $1,000, given by the Metropolitan Life Insurance Company, through the American Social Hygiene Association, for the best pamphlet on Social Hygiene for Boys and Girls, has been awarded Dr. and Mrs. Donald B. Armstrong of Stapleton, S. I. Dr. Armstrong is director of the Social Welfare Department of the New York Association for Improving the Condition of the Poor, and Mrs. Armstrong is actively interested in social and philanthropic work. Nearly 500 essays were entered in competition from all parts of the United States, Canada, Europe

and South America, and the task given the judges to compare and pass on these manuscripts was not light. The judges were: Mrs. Martha P. Falkner, superintendent of the Sleighton farms, State Training School for Girls, Darlington, Pa.; Lee K. Frankel, sixth vice president of the Metropolitan Life Insurance Company, New York; Dr. Luther H. Gulick, president of the Campfire Girls of America; Miss Julia C. Lathrop, chief of the Children's Bureau of the United States Department of Labor; Dr. Milton J. Rosenau, Harvard Medical School; Dr. Victor C. Vaughan, dean of the Department of Medicine and Surgery, University of Michigan; and Mrs. Ella Flagg Young, formerly superintendent of schools of Chicago. Dr. and Mrs. Armstrong's essay will appear in the next issue of the *Quarterly Magazine* of the American Social Hygiene Association.

Bequests and Donations.—The following bequests and donations have recently been announced:

Daviess County Hospital, Washington, $6,000, by the will of Miss Elizabeth Hoeshead of that city.

Lebanon Hospital, New York, $7,000, and a medical library valued at $4,020, by the will of Abraham Meyer.

New York Eye and Ear Infirmary, $10,000, by the will of Miss Serena Rhinelander.

Methodist Episcopal Hospital, Brooklyn, $10,000, by the will of George W. Collard.

Beth Israel Hospital and Lebanon Hospital, New York, each $1,000, by the will of Henry Glass.

Beverly (Mass.) Hospital, about $7,000, being one half of the residue of the estate, by the will of Annie E. Simonds, Beverly.

Grady Hospital, Atlanta, Ga., a donation of $10,000, for the building of a nurses' home by Mrs. Joseph Hirsch, Joseph H. Hirsch, Jr., Atlanta; Mr. Milton Hirsch, Chicago, and Mrs. Arthur L. Wile, Savannah, Ga. The home for nurses is to be known as the Joseph Hirsch Memorial.

Lakeside Hospital, Cleveland, $250,000; Charity Hospital, $50,000; St. Alexis Hospital, and the School of Medicine of Western Reserve University, Cleveland, each $50,000; and the Babies' Dispensary and Hospital, $25,000; the Tuberculosis Free Dispensary and the Maternity Hospital, Cleveland, each $25,000, by the will of Robert R. Rhodes, Cleveland.

St. Luke's Hospital, Orlando, Fla., a donation of $5,000, from "a friend on the East Coast."

Dr. Calvin S. May, New York, $2,000, by the will of Mrs. Alice T. Wheelock.

Dr. George M. Swift, New York, $10,000; St. Mary's Free Hospital for Children, New York, $80,000; St. Luke's Hospital, New York, $25,000, by the will of Mrs. Mary Van Nest Jackson.

Sisters of Charity of St. Vincent De Paul, for establishing a branch of St. Vincent's Hospital at Stanford, Dutchess County, N. Y., for the treatment of sufferers from cancer, $300,000; St. Joseph's Hospital, Yonkers, N. Y., $10,000; German Hospital, Catholic Institute for the Blind, and Knapp Memorial Eye Hospital, New York, each $5,000, by the will of Mrs. Mary A. Holloran.

Davis Memorial Hospital, Elkins, W. Va., $30,000, by the will of Henry Gassaway Davis.

FOREIGN

Deaths in the Profession Abroad.—P. Grocco, senator and professor of internal medicine at the University of Florence, Italy, and author of numerous contributions to science on the pathologic physiology of the heart and lungs, aged 60. Grocco's paravertebral triangle of dulness on the side opposite a pleural effusion and his method of percussion are familiar in the textbooks.——J. F. Schmid of Bern, Switzerland, chief of the national public health service, which he was influential in organizing and had brought to a high grade of efficiency during his twenty-seven years of service in it, aged 66.

WAR NOTES

The Censor in Italy.—An Italian exchange brings word that the authorities have forbidden the publication of any items relating to the health and sanitary condition of the troops.

The Camp University in Italy.—The *Policlinico* relates that on February 13 San Giorgio di Nogaro was the scene of a notable event, namely, the inauguration of the "Universita Castrense," under the auspices of the government and the military authorities. The aim of the "Camp University" is to enable the last two years' medical students serving in the army to continue their medical studies and keep up their courses. Professor Tusini is rector of the university, and Professor Ricci has charge of the bacteriologic laboratory and instruction. The list of professors includes some of the leading scientists of Italy, serving as consultants with the army, including Ascoli, Dionisi, Lustig and Sclavo. There were 400 medical students at the inauguration, and the enthusiasm was great. Barracks have been provided for the students' lodgings; the lectures are to be given in the town hall and other buildings. Besides the facilities for teaching afforded by the base hospitals for sick and wounded soldiers, headquarters have been arranged there also for cases of nervous and mental disease, etc., and every effort is being made to have the courses complete.

BERLIN LETTER

BERLIN, Feb. 15, 1916.

Congress of the German Orthopedic Society

The meeting of this society was held February 8 and 9, with a program of unusual interest.

THE SAUERBRUCH ARTIFICIAL HAND

A notable contribution was that of Professor Sauerbruch, director of the surgical clinic in Zurich, who described an artificial voluntarily functionating hand which he had devised. With this hand the patient is able to lift 10 kg., and the flexor power of the forearm muscles can be made to average between 30 and 45 kg. Exercises will increase this function, and at no time is it lessened. The finger action is regulated by means of a peculiarly constructed system of pulleys, permitting each finger to be moved separately and to any desired degree, so that objects of irregular contour can be grasped firmly. Sauerbruch discussed at great length plastic operations to be performed for the purpose of utilizing, to the fullest degree possible, not only the tendons of muscles, but also the muscles themselves. He showed how the action of the biceps and triceps muscles could be carried over to this artificial hand. In the absence of a suitable illustration, words cannot be made to describe the apparatus adequately; but it would seem that this artificial hand is "almost human." While the fingers are closed by muscular action, they are opened passively by means of springs. The fingers are closed so tightly that it is almost impossible to open the hand forcibly. This makes the hand exceedingly valuable, because while the fingers are kept closed it is impossible to drop any object which has been grasped by them. With a little practice the most wonderful things can be done with this artificial hand, although it is still an artificial hand and cannot be made to perform the work of the natural hand.

REGENERATION OF NERVES

Another paper of great interest was that of Professor Edinger of Frankfort on the regeneration of nerves and a new operation for uniting severed nerves. He believes that the reunion of divided nerves is brought about, in part at least, by means of a semifluid substance or tissue thrown out by the ganglion cells, and that new material for growth is found in the peripheral "accessory growth" cells. Edinger succeeded in constructing a similar material from silicic acid. The neuraxis or axis cylinder remains permanently separated from its neuron. The separated portion of nerve fiber disintegrates; only the accessory cells for growth remain alive. Straightway, however, a new axis cylinder is thrown out from the ganglion cell, and nerve regeneration as well as restoration of function is possible even after years have elapsed since the destruction of the nerve, unless the growth of the nerve fiber is checked by scars or otherwise. Embryonal neuroglia tissue has been utilized for plastic work, and Edinger made use of such tissue in his neuroplasty. A section of artery was removed from an animal and filled with embryonal nerve tissue. The proximal and distal ends of the divided nerve were then placed within the lumen of the artery above and below, and the nerve ends reunited themselves by growth with astonishing rapidity. Ludloff's technic is said to make it possible to adapt this procedure to any case, no matter how great the distance between the divided nerve ends. Therefore, many patients have been restored to usefulness who previously would have suffered from a perpetual paralysis of the particular muscle or muscles involved. Ludloff reports a case in which function was restored within a few weeks, although 15 cm. of the ulnar nerve had been resected.

SHOT WOUNDS OF PERIPHERAL NERVES

Professor Foerster of Breslau said that the most important shot wounds of peripheral nerves are those in which the nerves of the upper extremity are injured. Frequently the nerve is completely divided, and then again the ends may be united by scar tissue. The great problem to be considered is how function can be restored. Many of these shot wounds heal spontaneously, but some do not. Foerster sutured the nerve in seventy-seven cases, and in fourteen he performed a neuroplasty. The result in most cases was that the patients were rendered fit for duty. Stoffel of Mannheim is not so well satisfied with this work. Many operations are performed late, and frequently the distance between the divided nerve ends is very great. Poor technic also is responsible for failures. He described a new method of nerve suture which makes it possible to reunite the nerve ends without tension or hemorrhage, no matter how great

the distance between them. He reported a large number of cases in which he operated, and the results show that he was too pessimistic in his statements.

SCHOOLS FOR SOLDIERS WITH BRAIN INJURIES

In discussing this subject, Professor Goldstein of Frankfurt-on-the-Main said that injuries to the brain result not only in physical, but particularly in psychic defects, the latter predominating. Speech disturbances of various kinds practically make invalids of these patients, and they become unfitted for various occupations. Many of the mental disturbances, if not of severe type, gradually disappear spontaneously; some of the patients can be reeducated, especially if they are young, so that a sort of compensation for lost function can be established. They must be taught to speak just as children are; but they will be found to be much more backward. The only proper teacher for them is a physician who is well versed in neurology and neuriatry. A special school should be established, and the reeducation treatment must be begun early before the surgical treatment is completed. Instruction should be individual, and special consideration given to the fact that these patients tire easily and that psychic shocks must be avoided. The schools should be established in hospitals, and special institutions for further treatment provided so that the patients can remain separated from the usual run of "nervous" patients. The results obtained thus far are very promising. It probably will not be possible, however, to restore these patients so that they can return to their former places in the community, but every effort should be made to influence them psychically to a degree which will permit any one of them to return to his family.

Professor Poppelreuter (Cologne-Lindenthal) described his experience at an institution of this kind in Cologne. There were sixty patients with twelve instructors. Attached to the school is a workshop or a sort of manual training department in which can be determined the patient's ability to do work. Many of the injured are able to work, although they cannot resume their places in the ordinary workaday world. Therefore, suitable employment must be secured by some body organized for that purpose.

Professor Gutzmann of Berlin did not agree with Goldstein that these patients should be taken in hand early. He has eighty patients suffering from speech disturbances in his care at the Charité. His experience has led him to fear that harm may be done by beginning this instruction too soon.

PARIS LETTER

PARIS, Feb. 24, 1916.

The War

DISINFECTION AND IMMEDIATE OR EARLY UNION OF RECENT WOUNDS

The use of Dakin's fluid in the treatment of wounds, about which so much has been said of late, continues to be much discussed in medical societies. At a recent meeting of the Société de chirurgie de Paris, Dr. Cunéo showed that in order to disinfect a recent wound and obtain immediate or early union there is no need to employ almost continuous lavage, lasting possibly several days, with Dakin's fluid. Whenever Cunéo had to treat wounds several hours old, he disinfected and reunited them successfully in the following simple manner: In the case of a seton wound amenable to immediate disinfection, by means of a pair of long forceps he passed through the wound a gauze compress, soaked in any suitable disinfectant, such as hydrogen peroxid, undiluted or diluted, tincture of iodin, 1:20, etc. Holding the two ends of this compress, he rubbed it vigorously back and forth through the wound, removing the debris of clothing and other foreign matter. This procedure was repeated two or three times. Nine times out of ten the patient developed no complications. If the wound became infected, Cunéo laid it open. In this way he or his assistants treated hundreds of wounded. In cases of tortuous wounds, the technic was a little more complex. The wound, made larger if necessary, was held open by traction forceps. Then some tepid solution was poured in until all of the recesses were washed out. The wound, having been well cleaned, was then closed without drainage.

In the case of head injuries, Cunéo carried out the following procedure early on the day that the wounded arrived. He outlined around the cutaneous wound a large flap with the convexity uppermost; the wound was circumscribed by an incision and immediately sutured. The site of the fracture was then cleaned, the splinters removed, etc., and the generally abundant hemorrhage was arrested with tampons. Two or three days afterward, if the patient was doing well, the tampon was removed and the flap was sutured without draining. Wounds treated in this way gave a greater percentage of cures than that obtained by Cunéo with his old technic (cruciform incision, cleaning of the site of fracture, and prolonged tamponing).

Cunéo disclaimed the credit for originating the procedure described, which is in general use at the front. He believed that the recent circular addressed to the military physicians on the initiative of Dr. Tuffier extoling the use of Dakin's fluid was, at least, futile.

Dr. Tuffier replied that, although several hours after the wound has been made a mechanical disinfection, consisting of opening up, the removal of foreign material, and the excision of mortified parts, was alone sufficient to insure secondary reunion of a wound of war, such a procedure is no longer sufficient after several days have passed. At that time he believes a chemical disinfection necessary. Such a disinfectant is Dakin's fluid which therefore ought to be considered an excellent topical application.

Dr. Quénu believes that this statement of Tuffier's throws considerable light on the question of dressing with Dakin's fluid. Tuffier admits, in fact, that early primary reunion will take place with any chemical application whatever, provided the wound is cleaned during the first hours after it has been received, and is freed from contused parts and splinters. Quénu has repeated this continually to the Société de chirurgie and the Académie de médecine in response to a communication from Professor Pozzi (THE JOURNAL, Dec. 11, 1915, p. 2101, and Feb. 5, 1916, p. 442.)

Dr. Broca stated that for a long time all surgeons have been aware of primo-secondary reunion of wounds, that is to say, reunion of wounds at the stage of granulation. Why, then has this "new" method created such a sensation? Does it not seem as if Dr. Carrel, who is a physiologist but not a surgeon, finding himself confronted by facts that heretofore were unknown to him, believed his practice new because surgeons had passed over in silence observations which to them were not unusual?

Professor Monprofit of Angers believes that it is unwise to speak too much at present of immediate or secondary reunion in surgery at the front, where even now there may be seen at times unsatisfactory results from immediate reunions; it is to be feared that inexperienced persons may be induced by such reports to attempt to produce reunions that will not be favorable to the wounded. Monprofit believes that it is best to hold to the classic rules of surgery—incision, opening up, cleaning the wound, and drainage—the nature of the antiseptics used being of less importance.

Dr. Hartmann concluded: (1) that, according to the consensus of opinion, disinfection of wounds of war is easier the sooner the treatment is begun after the wounds have been received; (2) that this disinfection may be effected by different means; Tuffier himself described a series of complicated fractures of the thigh, the humerus, and the pelvis that were reunited immediately without complications after disinfection by agents other than Dakin's fluid, thereby showing that this liquid, and, consequently also, the circular he prepared, is useless; (3) that the treatment of wounds described in this circular is even dangerous since it is practiced by physicians who have only recently had any surgical experience. On the other hand, according to Monprofit, physicians in general should realize the utility of opening up and draining.

TREATMENT OF HEAD WOUNDS

Dr. Arnaud made an interesting communication on this subject to the Réunion médico-chirurgicale de la X-e armée. According to him, every head wound, however small, should be laid open to ascertain whether or not there has been any injury to the skull. Even if there seems to be a mere scratch or abrasion, the skull should be trephined, for thus it may generally be determined whether or not there has been any injury to the inner surface of the skull. It is even more important that a more serious lesion (such as a fissured, comminuted or a depressed fracture) should be trephined. The bony wound should be trimmed up and projecting tags removed. In the absence of any injury to the dura mater the prognosis of these cases is very favorable. When the dura mater has been injured, however small the lesion, the opening should be made larger, for in such cases there is often a large focus of injury subjacent to the cerebral contusion. Any splinters of bone and any foreign body (fragment of shell) must be carefully removed. In case of a deep wound of the brain, drainage must be instituted, not with gauze, but with a small drain inserted to the limits of the contused area and

left in place for some time. Patients treated in this manner are cured in large numbers, and often show no signs of deficiency. At times, however, there arise complications, indicated by fever, vomiting, agitation, or coma; it may be a case of a simple meningeal irritation, the formation of an abscess in the area of contusion, often about a foreign body that has not been removed, or a case of meningeal encephalitis. In such instances the surgeon should always have recourse to roentgenography, which will show the presence of any foreign body, and to lumbar puncture, which will afford information regarding the nature of the complication. It is most necessary that the foreign body be removed. In the case of meningeal irritation, lumbar puncture will have the best effect. If cerebrospinal fluid is obtained mixed with pus the prognosis is very bad since, in the case of an area of deep cerebral contusion, it is a matter, not of a progressive meningoencephalitis beginning in the brain, but rather of the irruption of septic substances into the ventricular cavities by means of a perforation in one of their walls.

In the case of a perforating shot wound of the head (these are extremely grave) it is necessary to trephine the two openings: the orifice of entry, which contains the splinters and is infected, must be drained particularly; on the other hand, the orifice of exit must be trephined extensively, for on this side are found fissured fractures and also a large area of cerebral contusion.

There are some cases in which the skull alone has been injured and the dura mater has not been involved; the latter, however, does not pulsate; in such cases there is a severe cerebral contusion with often extensive subdural hematoma. There may be also paralysis and convulsions. In such cases a cruciform incision should be made in the dura mater and the subarachnoid space drained. There is no need to fear infection from without or cerebral hernia. The patients recover without complication much better than if the dura mater had not been incised.

In fractures of the base of the skull in which the projectile penetrates a natural cavity (the auditory canal, the orbit, or the submalar region), it is rash to operate on the site of the fracture; the wound should merely be disinfected. To prevent the development of threatened encephalitis the surgeon must resort, as in cases of fracture of the base by contrecoup, to preventive drainage of the subarachnoid space according to the precepts of Vincent and Cushing.

THE STATUS OF THE PHYSICIANS OF THE RED CROSS SOCIETIES

In the *Caducée*, a journal of military medicine, Dr. Schneider, medical inspector of the army medical service (whose rank corresponds to that of general) complains of the status given to the physicians in the auxiliary hospitals under the Red Cross societies. The lay elements in the management of certain societies have had, in general, an unfortunate influence on their policies, notably on those which concern the status of the physician-in-chief in the auxiliary hospitals. The dominant idea of the regional committees of these societies is to obtain the services of the best physicians of the locality and to exploit their competence, their reputation, and their scientific position but not to allow them any administrative or directing authority. The physicians are to content themselves with a medical rôle, and to regard themselves as lucky if their professional standing, their manner of operating, and the importance of cures obtained or of failures are not subjects of discussion by the nurses. That civilian physicians, perhaps distinguished, but somewhat too old for heavy practice, should accept this very modest position is not at all astonishing. If they are satisfied, there is nothing to be said about it. But that the Red Cross societies should presume to impose these humble, and in fact, subordinate positions on all of the physicians they employ, and particularly on former physicians of the army, the navy, and the colonies, as well as those physicians of the reserve and the territorial army whom they have been obliged to borrow from the army medical service in certain regions for want of civilian physicians, Schneider believes, is absolutely intolerable. It is too often forgotten that the instructions of May 21, 1913, in regard to the use during war of the resources of the country for taking care of the sick and wounded in the army specify that the auxiliary hospitals shall conform to the regulations of the medical service of the army of the interior. These regulations give the supreme authority to the physician-in-chief, and subordinate the administrative power to him. The desire to deprive of such authority the military physician placed by the regional director of the army medical service at the disposal of the auxiliary society, cannot be indulged. The fact that he is employed temporarily in an auxiliary hospital should not deprive the military physician of the rights given him by the fundamental regulations of the army medical service.

It may be objected, however, that the philanthropic societies cannot subordinate their hospital directors and administrators to the physician-in-chief since the societies support these establishments and are obliged at times to resist wasteful exactions of certain physicians. While conceding this, Schneider believes that is possible to give the physicians-in-chief of the auxiliary hospitals the rights and duties of the physicians-in-chief of the military departments of the *hospices mixtes* in times of peace. In these establishments the material and financial administration belong to the steward or the lay superintendent of the hospital. This is in accordance with an agreement concluded between the war department and the administrative commission of the hospital—an agreement which fixes the daily amount to be paid by the government for the care given army patients. The physician-in-chief, however, has authority in all matters concerning the technical part of the service, hygiene, discipline, etc. This plan for the relationship between the physicians-in-chief and the administrative heads of the auxiliary hospitals is the most suitable, and strict observance of it will certainly give entire satisfaction to the interests of the societies and at the same time retain for the physician-in-chief the prestige and the just authority which he should have in a hospital caring for the sick and wounded of the army.

VACCINATION AGAINST SMALLPOX DURING THE WAR

At the Société de médecine de Nancy, Dr. Perrin mentioned that, out of 29,076 vaccinations against smallpox performed during the first seven months of the year on soldiers of all ages, 13,616 or 46.14 per cent. were successful. The group of men aged over 36 and constituting almost one-fourth of the forces in question gave over 64 per cent. of successful vaccinations. This group is composed of regulars, aged from 36 to 42, and of reserves, aged from 43 to 48. There were more successful vaccinations (78 per cent.) among the older men; among the younger ones the percentage was 75 per cent. It appears from these figures that vaccination against smallpox is useful at all ages.

LONDON LETTER

LONDON, Feb. 28, 1916.

The War

RACIAL DAMAGE OF WAR

At the meeting of the Royal Statistical Society, Maj. Leonard Darwin read a paper on "The Statistical Inquiries Needed after the War in Connection with Eugenics." He said that our casualties might now be in number as high as 6.5 per cent., and the Germans' possibly between 20 and 30 per cent., of the number of fighting men available. Though all must devote their main energies to winning the war, yet some thought might even now be given to the inquiries which might profitably be instituted, when peace gave more leisure, concerning its racial damage, which would depend on whether those killed were above or below the average in inborn qualities. Balancing the conflicting considerations, the conclusion arrived at was that war unquestionably killed off the better types, and was therefore highly dysgenic. The active causes of the damage would not cease with the war, because the birth rates of the higher types would continue to be adversely affected. Those born in the last eighteen years would form an entirely undamaged section of the community, and it would be increasingly necessary for the next twenty years to inculcate a belief that where both parents are fairly healthy it was immoral and unpatriotic to limit the size of the family, except in view of bringing up the children in comfort, though not necessarily in luxury, and of there being fairly wide intervals between births. It followed also that the racial damage would be at its worst when peace was declared, and the checking of the multiplication of the unfit would never be more needed than then.

Sir William Turner

Sir William Turner, K.C.B., D.C.L. (Oxon.), LL.D. (Cantab.), F.R.S., principal of the University of Edinburgh, late professor of anatomy in the university and president of the General Medical Council, the outstanding figure in British anatomy for half a century, has died in his eighty-fifth year. The son of an English father and a Scottish mother, he was born at Lancaster in 1832 and became a student in St. Bartholomew's Hospital in 1850. He graduated with honors at the London University in 1857. His

ability attracted the notice of Paget, then assistant surgeon to the hospital, who recommended him in 1854 to Goodsir, the professor of anatomy in Edinburg, when the latter was looking for a demonstrator. He soon established a reputation both as a teacher and an investigator, and when Goodsir died in 1867 he succeeded to the chair, which he occupied for thirty-six years. His successor, Prof. Arthur Robinson, thus describes his work: "Sir William Turner became an anatomist in 1854, and he remained an anatomist until his death in 1916. During the intervening period he published 276 communications, of which twenty-six were addresses mainly on anatomic or medical subjects, and four were memorial notices. The remainder dealt with human anatomy, human physiology and human pathology, comparative anatomy and anthropology. In addition, he edited Sir James Paget's 'Lectures on Surgical Pathology' and the collected work of Goodsir and of Rolleston, and he was for a long period the editor of the *Journal of Anatomy and Physiology*." Indeed, he was the founder of this journal. Among his most important original papers may be mentioned "Relations of the Human Cerebrum to the Outer Surface of the Skull and Head," "System of Anastomosing Arteries Between and Connecting the Visceral and Parietal Branches of the Abdominal Aorta," and "Supplementary Supply System of Nutrient Arteries for the Lungs." In these papers he drew attention to conditions of considerable practical importance which had previously been unrecognized. But it was in the domain of comparative anatomy and anthropology that he became most famous. His work on "Comparative Anatomy" included invertebrates, fish and mammals, and particularly the various groups of cetacea. In 1871 he commenced his important work on the placenta, and in 1876 delivered lectures at the Royal College of Surgeons of England on the comparative anatomy of the placenta. In anthropology he dealt with both prehistoric and modern man, and discussed the difference between the various races and indicated new methods for their estimation. Some of his most interesting memoirs deal with the "Craniology of the People of Scotland," and "Craniology of the People of the Empire of India." He was a must lucid writer and never ambiguous because he did not attempt to expound a subject until he had obtained a perfectly clear idea in his own mind. His influence as a teacher was so great that the list of his pupils who have become professors of anatomy in Great Britain and the colonies is quite a long one. His classical monographs on the craniologic features of the Scottish people, both ancient and modern, on the peoples of the empire of India, on the extinct natives of Tasmania, and on the natives of New Guinea and of Borneo, were based on material which he gradually accumulated—chiefly through the help of his pupils.

The Government Neglect of Science

Maj. Leonard Darwin, who presided at the third Galton lecture before the Eugenics Education Society by Prof. E. B. Poulton, said that the great lesson of Galton's life must be learned—that men are not born equal. It would be pleasant to believe that all suffering could be swept away by social reform; but we must bend our wills to the task of making the best of the world as we find it. Social conditions would not prevent national degradation if the inborn qualities of a nation were deteriorating. It was for us to devote ourselves in the first place to winning the war, and then—to quote Lincoln—to seeing "that this nation, under God, shall have a new birth of freedom." And Galton would have said that increasing freedom and racial degeneracy never marched hand in hand.

The lecture was delivered by Professor Poulton, who said that the neglect of eugenics by the government had been as conspicuous as its neglect of other branches of science. The next general election would reveal a revolution in political thought, and the Eugenics Education Society must fight alongside sciences and the great business interests of the country, insuring that scientific men and business men should have weight in our future form of government. The government had treated scientific men with incredible meanness. The late Professor Meldola was twice offered a decoration of the Legion of Honor—in 1900 and again in 1907. On both occasions the Foreign Office forbade him to accept it. It could not be supposed that either Lord Salisbury or Sir Edward Gray wished to behave in so rude a manner to a friendly nation and to a distinguished man. The cause was to be found in the wooden system erected by some jack-in-office of the permanent service in order to magnify his own petty tyranny. Then came the war, and in the utter confusion caused by our policy the country was in serious difficulty, with many important industries under enemy control and quite inaccessible. So Professor Meldola, with his unrivaled knowledge of the relations between science and industry, was asked to preside over some committees and to serve on others. He was too patriotic to refuse, but the strain was too great for one who was far from strong, and he died after a few months of overwork. The character of the examination for civil service posts and for the army must be changed, and science must be given a far more important place. That change would at once react on our public schools and the old universities, and would bring the members of future parliaments under the influence of science.

Mr. Robert Jones at the Franco-American Ambulance in Paris

When the staff of the Franco-American Ambulance in Paris heard that Mr. Robert Jones was in the city for a few hours, the members collected twenty or thirty patients with gunshot wounds of the upper limbs and induced him to give an impromptu lecture on their treatment. He laid stress on the importance, in cases in which ankylosis of the shoulder joint is to be anticipated, of keeping the upper arm during treatment in such a position that the face and top of the head can easily be reached by the hand. The advantage was that if ankylosis occurred with the humerus in this position, full utility of the upper limb was nevertheless practically conserved, since tilting of the shoulder blade would enable the patient to effect most of the other movements of the hand required in daily life. A second point was the desirability of treating all fractures of the forearm with the radius in a position of complete supination instead of halfway between that position and full pronation. Experience showed that adoption of the latter or classical position often resulted in serious loss of function, for though the hand could easily be pronated, it could not be fully supinated. If, contrariwise, a patient should be treated with the radius completely supinated from the beginning, the worst that could happen would be loss of natural pronation power, and this as compared with loss of supination power was a relatively small evil, since sufficient pronation could be secured by movement at the shoulder. A third point related to gunshot wounds involving the wrist. The joint should be kept, not in a position midway between flexion and extension (that is, with the hand in the same line as the forearm), but in one of hyperextension, or, so to speak, dorsal flexion, for should a stiff wrist result from the injury, the grasp of the fingers would be much stronger if the carpus were pushed backward than if the wrist were straight or the hand bent toward the flexor surface of the forearm. The same position also afforded a much better chance of securing a return of power in cases of wrist-drop due to lesions of the musculospiral nerve. But in such cases not merely the carpus but also the whole palmar surfaces of the fingers should be supported, the length of the digital portion of the splint being lessened as soon as the patient regained any power of extending the terminal phalanges by voluntary effort.

Sanaphos Again

The proprietors of sanaphos are still endeavoring to exploit the strong anti-German feeling of the country for the benefit of their nostrum so that it may take the place of the German sanatogen. The sale of the latter is still permitted under the condition that none of the profit be sent to Germany. The sanaphos people in a quarter page advertisement in the *Times* are asking the public to petition Parliament for the passage of an act to forbid firms trading which are mainly owned by Germans for the reasons that "(1) Sanatogen is not 'necessary' now because (2) it is not the best article of its kind now available; (3) it is surpassed by the later, more highly perfected and wholly British owned product, sanaphos." This "petition" is accompanied by some dozens of anonymous testimonials alleged to be from physicians and by a few from former users of sanatogen who declare that sanaphos is a much better article. It is evident that the methods of nostrum venders, whether German or British, do not differ and may be summed up in one word—bluff.

New School of Tropical Medicine in Calcutta

The governor has laid the foundation stone of the new tropical medical hospital. The school, which has received an endowment for ten professors, is already built, and will be opened after the war. Help has been obtained from commercial circles, wealthy Indians, and the Rockefeller Foundation. China is sending two physicians annually for training. Sir Leonard Rogers, the authority on tropical disease, declared that the school, which would be the first to be established in the tropical portion of the British empire, would be second to none in the world.

Marriages

THOMAS JOHN GANNON HOGAN, M.D., Lockport, N. Y., to Miss Anna May Harvey of North Tonawanda, N. Y., in Fredonia, N. Y., March 2.

CHARLES HERMANN EYERMANN, M.D., St. Louis, to Miss N. Irene Smith of Sullivan, Mo., in Chicago, March 4.

CULLEN WARD IRISH, M.D., Barberton, Ohio, to Miss Pauline Hartley of Athens, Ohio, March 1.

SESSLER HESS, M.D., Muskogee, Okla., to Miss Irene Marrow of Nashville, Tenn., December 24.

HUGO KENNETH SCHUSSLER, M.D., New York City, to Miss Sybil Conklin of San Diego, recently.

HALSEY DEWOLF, M.D., Providence, R. I., to Miss Edith Howe of Philadelphia, recently.

Deaths

Benjamin Franklin Campbell, M.D., Brookline, Mass.; Harvard Medical School, 1857; aged 81; a Fellow of the American Medical Association and a veteran of the Civil War, in which he served as assistant surgeon attached to the U. S. Army Field Hospital, Pamunkey River, Va., and the Webster U. S. Army General Hospital, Manchester, N. H.; for several years a member of the Boston school board; representative in the legislature from East Boston and state senator from the First Suffolk District; died at his home, March 9.

Alfred Patten, M.D., Mineola, Texas; Kentucky School of Medicine, Louisville, 1881; aged 68; a Confederate veteran; local surgeon at Mineola for the Missouri, Kansas and Texas, and Texas and Pacific systems; president of the Mineola State Bank; vice president of the Golden State Bank; and stockholder in a number of other banks; vice president of the Mineola Light, Ice and Power Company; died at his home, March 7, from pneumonia.

Irving O. Nellis, M.D., Utica, N. Y.; University of Vermont, Burlington, 1882; aged 59; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; for many years a practitioner of Herkimer, N. Y., and coroner of Herkimer County for five years; health officer of Herkimer from 1884 to 1894, and later president of the village health board and deputy sheriff of Herkimer County; died at his home, March 8.

John Specht, M.D., Superior, Wis.; College of Physicians and Surgeons, Keokuk, Iowa, 1883; aged 55; a Fellow of the American Medical Association and once president of the Douglas County Medical Society; one of the leading surgeons of the northwest; once health commissioner of Superior; died in the Eitel Hospital, Minneapolis, March 8, after an operation for appendicitis and disease of the gallbladder.

Nathan Gross Bozeman, M.D., New York City; College of Physicians and Surgeons in the City of New York, 1885; aged 60; a Fellow of the American Medical Association; gynecologist to St. Mary's Hospital, and consulting surgeon to the Bayonne and Hackensack (N. J.) hospitals and the Northwestern Dispensary; a gynecologist; well known in the Middle States; died at his home, March 17, from pneumonia.

Joseph Amadie Tremblay, M.D., Ecôle de Médecine et de Chirurgie, Montreal, 1869; aged 69; a member of the Montana State Medical Association; for many years a practitioner of Missoula, Mont.; and later a resident of Butte; for three terms coroner and for many years county physician of Silver Bow County; died at the home of his daughter in Butte, March 6, from heart disease.

Walter L. Dorland, M.D., Pueblo, Colo.; Western Reserve University, Cleveland, 1874; aged 66; formerly a Fellow of the American Medical Association; a member of the Colorado State Medical Society and once president of the Pueblo County Medical Society; local surgeon of the Santa Fe System and of the American Smelting and Refinery Company; died at his home, March 8.

W. W. Fitts, M.D., Carrollton, Ga.; Atlanta (Ga.) Medical College, 1860; aged 85; a member of the Medical Association of Georgia; a practitioner and druggist, and a member of the board of directors of the First National Bank of Carrollton; for nearly thirty years president of the local board of education; died at his home, March 9.

Joseph H. Hewitt, M.D., Saranac Lake, N. Y.; Johns Hopkins University, Baltimore, 1906; aged 37; a Fellow of the American Medical Association; a member of the American Association of Pathologists and Bacteriologists; formerly a pathologist of Chicago and Cleveland; died in Saranac Lake, N. Y., January 10.

Edward M. Doyle, M.D., Yankton, S. D.; State University of Iowa, College of Medicine, Iowa City, 1888; aged 53; city commissioner of Yankton; for eighteen years a practitioner of Kansas City; for many years a member of the board of education; died at his home, March 3, from pneumonia.

Charles Farquhar, M.D., Olney, Md.; University of Pennsylvania, Philadelphia, 1885; aged 74; a Fellow of the American Medical Association; secretary and treasurer of the Olney District Board of Health of Montgomery County; died at his home, February 1.

James Lanier Darwin, M.D., Huntsville, Ala.; Bellevue Hospital Medical College, 1888; aged 56; a member of the Medical Association of the State of Alabama; who had gone to Memphis for a surgical operation; died in that city, March 3, from heart disease.

Elias Gottstark Roos, M.D., Scranton, Pa.; University of Königsberg, Germany, 1888; aged 56; a Fellow of the American Medical Association and one of the foremost surgeons of Lackawanna County, Pa.; died at his home, February 29, from heart disease.

Matthew G. Guhman, M.D., St. Louis; Missouri Medical College, St. Louis, 1891; aged 43; a member of the Missouri State Medical Association; who was injured in an automobile accident more than two years ago; died at his home from nephritis, March 10.

John J. Sweetland, M.D., Constantine, Mich.; Cincinnati College of Physicians and Surgeons, 1889; aged 52; a member of the Michigan State Medical Society; was instantly killed by the overturning of his automobile near Mottville, Mich., March 7.

The Honorable James Edwin Robertson, M.D., Montague, P. E. I.; McGill University, Quebec, 1865; aged 75; a member of the Provincial Parliament in 1870; of the House of Commons in 1882, and of the senate in 1902; died at his home, October 19.

James A. Martin, M.D., Palestine, Ill.; Medical College of Ohio, Cincinnati, 1879; aged 60; a Fellow of the American Medical Association and for many years a practitioner and druggist of Palestine; died at his home, March 4, from heart disease.

Benjamin M. Beale, M.D., Washington, D. C.; University of Georgetown, Washington, D. C., 1873; aged 61; formerly a member of the Medical Association of the District of Columbia; died at his home, March 1, from cerebral hemorrhage.

Charles Dallas McLeod, M.D., Chatfield, Ohio; Marion-Sims College of Medicine, St. Louis, 1892; aged 52; a member of the Ohio State Medical Association; mayor of Chatfield and coroner of Crawford County; died at his home, March 8.

Frederick Jacoby, M.D., Columbus, Ohio; Eclectic Medical College of Pennsylvania, Philadelphia, 1862; aged 84; for many years a practitioner of Columbus; died at the home of his daughter in Agricola, Va., March 7, from arteriosclerosis.

Benzion G. Wernick, M.D., Boston; Tufts Medical School, Boston, 1903; aged 48; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; died at his home in Roxbury, about February 24.

Hiram M. Aspy, Geneva, Ind. (license, Indiana, 1897), aged 65; a practitioner for forty years and a member of the Indiana State Medical Association; died in St. Joseph's Hospital, Fort Wayne, Ind., February 28, from disease of the stomach.

John Herbert Frey, M.D., Corsicana, Texas; University of Virginia, Charlottesville, 1889; aged 49; a Fellow of the American Medical Association, and well known as a pathologist and bacteriologist; died at his home, March 6.

Hanson Liswell Marcy, M.D., East Orange, N. J.; Hahnemann Medical College, Philadelphia, 1873; aged 65; for many years a practitioner of Richmond, Va.; died at the home of his daughter in East Orange, March 9.

Edward Cass, M.D., Dresden, Ohio; Jefferson Medical College, 1854; aged 84; a member of the Ohio State Medical Association; for many years practitioner of Detroit; died at his home, March 9, from uremia.

Osa Hoerner, M.D., Lewisburg, Ohio; Ohio-Miami Medical College of the University of Cincinnati, 1913; aged 31; a member of the Ohio State Medical Association; died at his home, March 2, from scarlet fever.

Gaspard Upton Peltier, M.D., Cohoes, N. Y.; Bishop's College, Montreal, 1873; aged 67; a member of the staff of the Cohoes City Hospital; city physician of Cohoes for two terms; died at his home, March 2.

Milton Almond Curtiss, M.D., Kirksville, N. Y.; Syracuse (N. Y.) University, 1878; aged 60; a member of the Medical Society of the State of New York; died at his home, February 29, from pneumonia.

Charles Harold Goldsmith, M.D., New York City; Eclectic Medical College of the City of New York, 1906; Long Island Hospital, Brooklyn, 1910; aged 39; died at his home, February 29, from influenza.

William S. S. Gay, M.D., Chester, Pa.; Jefferson Medical College, 1869; aged 70; for forty years a practitioner of Delaware County, Pa.; died at the home of his daughter in Cleveland, February 26.

S. H. Dickerson, Chandler, Tex. (Registration, Forty-Eighth District Judicial Board of Texas, 1899); was instantly killed by the overturning of his automobile, 4 miles west of Chandler, February 29.

James Prescott Chamberlain, Boston (license, Massachusetts, years of practice, 1894); aged 84; a practitioner for twenty-six years; died at the home of his niece in Palm Beach, Fla., March 1.

Patrick Joseph Barry, M.D., Auburn, Iowa; State University of Iowa, Iowa City, 1891; aged 48; a member of the Northwestern Medical Society of Iowa; died in Carroll, Iowa, about March 9.

Ira Charles Bush, M.D., Santa Cruz, Calif.; Rush Medical College, 1889; aged 55; a member of the Medical Society of the State of California; died at his home, February 17, from malignant disease.

Julius Henry Moore, M.D., Brooklyn; Long Island College Hospital, Brooklyn, 1874; aged 78; for many years a practitioner of Williamsburg; died at his home, March 11, from senile debility.

George W. Davis, M.D., Marion, Ind.; Eclectic Medical Institute, Cincinnati, 1880; aged 60; a Fellow of the American Medical Association; died suddenly in Marion, March 4, from heart disease.

Henry Williams, M.D., Odessa, Mo.; Missouri Medical College, 1884; aged 60; local surgeon of the Chicago and Alton Railway; died at his home, February 1, from cerebral hemorrhage.

Edgar Langston, Port Isabel, Ind. (license, Indiana, 1897); aged 83; a practitioner of Indiana for more than half a century; died at the home of his son near Ellwood, Ind., March 10.

Luke Arthur Harcourt, M.D., Sacramento; University of Buffalo, N. Y., 1868; aged 77; a member of the Medical Society of the State of California; died in San Francisco, March 3.

Francis E. Himmelwright, M.D., Philadelphia; Jefferson Medical College, 1878; aged 69; for thirty years a practitioner of northeastern Philadelphia; died at his home, March 7.

Marcus F. Scruggs, M.D., Coleman, Miss.; University of Louisville, Ky., 1882; aged 60; a member of the Mississippi State Medical Association; died suddenly at his home, March 2.

George Henry Masters, M.D., Prospect, Ohio; Columbus (Ohio) Medical College, 1877; aged 68; a veteran of the Civil War; died suddenly at his home, March 5, from heart disease.

Enoch James Conyngton, M.D., Decatur, Ala.; Washington University, St. Louis, 1883; aged 57; one of the heroes of the yellow fever epidemics in Decatur in 1888; died at his home, March 4.

Edward Joseph Cunningham, M.D., Reno, Nev.; University of Pennsylvania, Philadelphia, 1900; aged 38; died at the home of his parents in Philadelphia, March 3, from tuberculosis.

George L. Beach, M.D., Chicago; Hahnemann Medical College, Chicago, 1883; aged 55; died in Hahnemann Hospital, Chicago, March 8, from carcinoma of the prostate.

Audrim T. Greer, M.D., Abbeville, Miss.; Memphis Hospital Medical College, 1892; aged 55; died suddenly in the railway station in Holly Springs, Miss., February 24.

Ferdinand Carl Ludwig Pfefferkorn, M.D., Lawrence, Mass.; Hahnemann Medical College, Philadelphia, 1883; aged 74; died at his home, March 8, from pneumonia.

William C. Foster, M.D., East End, Pittsburgh; Jefferson Medical College, 1874; aged 63; died at the home of his brother in Petrolia, Pa., March 7, from nephritis.

Henry W. Heryford, M.D., Millville, Calif.; College of Physicians and Surgeons, Keokuk, Ia., 1885; aged 65; died at his home, February 24, from cerebral hemorrhage.

Robert Barr Clark, M.D., San Diego, Calif.; University of the Victoria College, Coburg, Ont., 1866; aged 77; died in Tacoma, Wash., February 9, from pneumonia.

Ernan A. Bush, M.D., Delphi, Ind.; Physio-Medical College of Indiana, Indianapolis, 1903; aged 34; also a druggist; died in a hospital in Indianapolis, March 10.

Samuel Currie Matthews, M.D., Clanton, Ala.; University of Alabama, Mobile, 1915; aged 26; dropped dead while cranking his automobile, February 25.

Joseph William Rowan, M.D., Toronto, Ont.; Trinity Medical College, Toronto, 1888; aged 55; died in Toronto, December 26, from a nervous breakdown.

Albert C. Matthias, M.D., McComb, Ohio; Western Reserve University, Cleveland, 1869; aged 71; a veteran of the Civil War; died at his home, March 6.

John Miller Longcoy, M.D., Lima, Ohio; Joplin (Mo.) Medical College, 1882; aged 67; died at his home, February 26, from disease of the stomach.

Winfield S. Van Horn, M.D., Findlay, Ohio; Eclectic Medical Institute, Cincinnati, 1883; aged 62; died at his home, March 7, from arteriosclerosis.

Charles A. Bailey, M.D., Los Angeles; University of Vermont, Burlington, 1878; died suddenly in Los Angeles, February 29, from heart disease.

William O. Southard, M.D., Jonesville, S. C.; Medical College of Georgia, Augusta, 1875; aged 64; also a druggist; died at his home, March 7.

William James Stockard, M.D., Lawrenceburg, Tenn.; Vanderbilt University, Nashville, Tenn., 1884; aged 60; died at his home, February 27.

Henry B. Scurlock, Losoya, Texas (license, Texas, 1907); aged 59; a practitioner since 1879; died in a hospital in San Antonio, Texas, March 9.

Antoinette C. Pfau, M.D., Cincinnati; Hygeia Medical College, Cincinnati, 1899; aged 66; died at her home, March 8, from nervous breakdown.

Charles Orrison Maine, M.D., Stonington, Conn.; Dartmouth Medical School, Hanover, N. H., 1871; aged 72; died at his home, March 8.

Girard Wilkie Shipman, M.D., Birch Run, Mich.; Detroit College of Medicine and Surgery, 1891; aged 48; died at his home, February 29.

Robert Callihan, M.D., Rohnerville, Calif.; Jefferson Medical College, 1874; aged 74; died at his home, February 28, from heart disease.

Oscar Vernon Harris, M.D., Carson, Wash.; Rush Medical College, 1889; aged 60; died in his office, March 5, from cerebral hemorrhage.

Henry Betz, M.D., Brooklyn; New York University, New York City, 1886; aged 58; died at his home, March 12, from pneumonia.

Edward Llewellyn Crandall, M.D., Troy, N. Y.; Albany (N. Y.) Medical College, 1881; aged 59; died at his home, March 6.

Herbert A. Gale, M.D., San Francisco; University of California, San Francisco, 1879; died in San Francisco, February 26.

James L. Hull, M.D., Atlanta, Ga.; Medical College of Georgia, Augusta, 1889; aged 55; died at his home, February 26.

Elias Porter, M.D., Shousetown, Pa.; Jefferson Medical College, 1853; aged 74; died at his home, March 8.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

U. S. COMMISSION TO INVESTIGATE THE PROPRIETARY MEDICINE BUSINESS

The Board of Trustees of the American Medical Association, at its meeting, February 9, had called to its attention the action of the House of Delegates relative to appealing to Congress to appoint a commission for the investigation of the proprietary medicine business. The board was advised that the officers of the Association had been informed that the most effective way of presenting this matter would be to have it brought to the attention of the president by representatives of the Association. In view of this, the board asked the following to call on the president: Dr. William L. Rodman, President of the Association, Dr. W. T. Councilman, chairman of the Board of Trustees, Dr. Alexander Marcy, Jr., Riverton, N. J., Dr. Hiram Woods, Baltimore and Dr. George H. Simmons, Chicago. Dr. Rodman arranged that the president grant an audience, March 9. Dr. Rodman died the day before—March 8—and Dr. Woods was ill and not able to be present; but the others appeared before the president. Doctor Councilman presented the subject in the form of the following letter:

THE PRESIDENT:

Sir:—The relation of the proprietary medicine business to the public health is so close and vital that the American Medical Association some years ago commenced a practical investigation of the substances which were sold to the medical profession and public as remedies for disease. The object of these investigations has been to obtain and make public the facts thus far obtained with the ultimate object of safeguarding the health of the people. The results have been published by the American Medical Association in its journal, in pamphlets and in books. Similar investigations have been made by municipal and state boards of health, among the latter being Connecticut, Indiana, Kansas and North Dakota. These proprietary and patented preparations sold to the public have been investigated also by the United States Public Health Service, by the Bureau of Chemistry of the Department of Agriculture and by the United States Post Office Department, as the activities of these several branches of the federal government brought them in relation to these articles of trade. The result of the various inquiries has been to demonstrate that much of the business in those proprietary medicines colloquially known as "patent medicines" is an evil of national scope, a menace to the public health, and a grave economic waste. While much has been accomplished in the United States by the Food and Drugs Act and through the Post Office Department, the problem as it affects the people of the whole country has been scarcely touched.

In 1907 a commission appointed by the Australian commonwealth to investigate the question of "patent medicines" in their relation to the health of the people of that country published an exhaustive report. In this considerable space was devoted to "patent" and proprietary medicines emanating from the United States. Since then the Australian commonwealth specifically debarred from that country certain medical preparations originating in the United States.

Four years ago the British Parliament appointed a select committee "to consider and inquire into the question of the sale of patent and proprietary medicines and medical preparations and appliances and advertisements relating thereto." This committee made an exhaustive investigation extending over three sessions of Parliament and held thirty-three public sittings. It made a comprehensive report, which, together with the Proceedings, Minutes of Evidence and Appendices, was published in August, 1914, by order of the House of Commons. This report, as did that of the Australian commission, included investigations of certain American products which revealed facts not to the credit of our country. The British report embodied recommendations urging the enforcement of certain laws then existing, and suggested additional, specific, remedial legislation.

The House of Delegates of the American Medical Association, apportioned among all the states and representing over seventy-five thousand physicians, at its annual session in San Francisco last June, adopted certain preambles calling attention to the conditions referred to above; and a resolution praying the president and the Congress to consider the advisability of creating a commission to investigate the proprietary medicine business in the United States—such investigation to include not only the actual products, but the methods of sale and advertising thereof; and further praying that the results of this investigation be published for the information of Congress, as well as for the enlightenment of the general public.

The American Medical Association is firmly convinced that the solution of this problem is of vital importance to the public health, and by no means negligible from an economic point of view; further that the problem is national in scope and its solution is impossible if left to the individual states.

The American Medical Association through its undersigned committee earnestly prays that you will consider the advisability of recommending to Congress the appointment of a commission or special committee empowered to investigate the entire subject and to publish its findings for the enlightenment of the public and for the welfare of the nation and to aid Congress in enacting remedial legislation if such shall be deemed necessary.

The president, while not making any definite promises, expressed his interest in, and sympathy with the proposition.

ARE PHYSICIANS SELFISH IN OPPOSING FRAUDULENT "PATENT MEDICINES"?

While the Manufacturers Say They Are, the Druggists Are Not Convinced

We have, at various times, referred to the stock argument of the manufacturers to the effect that the medical profession is actuated by selfishness in giving the public the facts regarding fraudulent "patent medicines." As we have said before, there never was, in fact, a weaker argument, although, superficially, it is doubtless accepted by many who have given the question no thought. Every physician knows that the lurid advertisements of fraudulent "patent medicines" send many, many patients to his office. Every physician who has been in practice any length of time knows also that the sale and use of fraudulent "patent medicines" are responsible for many cases of prolonged sickness, due to the neglect of disease in its early stages. That the physician can possibly be actuated by altruistic motives in giving the public facts on a subject which his special knowledge peculiarly fits him to speak authoritatively, is never admitted by the manufacturer of fraudulent nostrums. Those who thus charge the medical profession with bad faith may fool some people some of the time, but they don't fool the druggists of the country. No better illustration of this fact can be given than an editorial that appears in the current (March) issue of the *Druggists' Circular*, a journal that represents all that is best in the profession of pharmacy. The editorial, which appeared under the title, "Manufacturers of Nostrums Blind to Physicians' Humanitarianism," is here given:

"One of the favorite arguments of the fakers who oppose the letting in of the light on their fakery by physicians, health officers and the better class medical journals, is that the fake medicines are cutting into the doctors' practice and the doctors are therefore financially interested in putting the fakers out of business. That there is no foundation in truth for such an argument so far as physicians of professional standing are concerned, is well known to pharmacists generally. If there are any who do not realize that medicine is among the most altruistic professions, even if it is not the most altruistic, they have only to consider what physicians are doing to prevent disease, in order to be forced to such a realization.

"Mosquitoes, flies and other insects disseminate the germs of yellow fever, typhoid fever and other diseases. Physicians discovered this fact. Did they keep it to themselves, or did they publish it broadcast to the world? If the medical profession were as eager for practice as the nostrum fakers would have us believe, they would have said among themselves: Flies and mosquitoes are our best friends; they cause sickness and the more sickness there is the busier we are and the more money we collect. That is what the nostrum

fakers would have said, and their minds are so constituted as to be unable to entertain a thought of a man's doing for the sake of humanity something which appears on its face to be depriving him of a part of his income: it is the possession of that kind of mind that leads a man into the business of trifling for profit with human health and life.

"Boards of health everywhere are endeavoring to abate those nuisances which are the cause of sickness. Members of the medical profession are like members of a fire department in that they seek to prevent the very thing which makes their calling a necessity. What would we think of a fireman who purposely permitted a conflagration in order that his comrades might show the city how important it was to keep up a well-paid fire department? And what would be thought of a man who charged the firemen of the country with opposing, on the ground that it was cutting into the firemen's business, some device for putting out fires, when the firemen themselves knew the device to be a fake, and an obstacle to fire prevention—a menace because of the false sense of security which it gave in time of danger?

"Physicians need no help from us to set them right before the world. We are not offering this as any such help. We write it merely to call anew the attention of our readers to facts with which they are already conversant in order that they may not be misled by the false pretenses of those whose interest it is to mislead them. Much is said and written about the relations between physicians and pharmacists, the subject being one of the most hackneyed in the literature of our calling, but so long as every pharmacist knows a self-sacrificing doctor who is a sort of counterpart of old Willum MacLure, and every physician knows a pharmacist on whom he may rely as guide, philosopher and friend, those relations are not going entirely to the bad. And neither are the druggists going to allow the nostrum fakers to poison their minds against the doctors, for among druggists there is a strong spirit of humanitarianism which enables them to see a side of the medical profession to which the nostrum men are blind."—(*The Druggists' Circular, March, 1916.*)

Correspondence

The Alleged Production of Pellagra by an Unbalanced Diet

To the Editor:—The paper on pellagra by Dr. Joseph Goldberger, which appeared in THE JOURNAL, Feb. 12, 1916, has interested me very much, especially his account of the experiment on convicts in Mississippi, from which he concludes that at least six of the eleven volunteers developed pellagra while under observation and apparently as a result of consuming an unbalanced or faulty diet.

The earliest account of this experiment, which has come to my notice, appeared in the Jackson *Daily News,* Nov. 1, 1915, the headlines of which are shown in the accompanying illustration (Fig. 1). In this report is a copy of a letter from Dr. Goldberger to Governor Brewer of Mississippi, which is as follows:

"Jackson, Miss., Nov. 1, 1915.

"Governor Earl Brewer,
"Jackson, Miss.

"My Dear Governor:

"I have the honor to advise you that the experimental test of the power to cause pellagra by means of diet, which your interest and cooperation made possible at the Rankin state farm on eleven convict volunteers, terminated yesterday, Oct. 31, 1915.

"The test has been completely successful, inasmuch as not less than six of the men have developed pellagra.

"It is needless for me to tell you of the great importance of this result to humanity. For nearly two hundred years science has been groping for the cause of pellagra, a disease which in recent years has sorely afflicted our southern states, and yours among them. The official records show that in your state over one thousand deaths were assigned to this one cause alone last year, and I am informed that this number will be greatly exceeded this year.

"Science and humanity will for all time owe you a profound debt of gratitude.

"The convict volunteers have faithfully carried out their agreement to submit themselves to the test, and the test being now completed, it is my duty to most strongly urge their claim on the people of your state, through you, for a pardon of their sentence and liberation from the penitentiary.

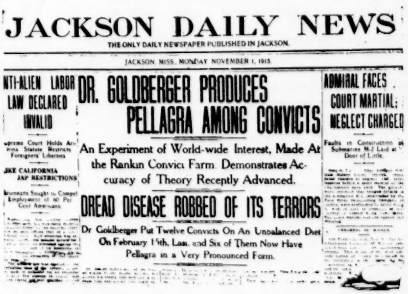
"These men have been under great physical strain. All are sick men. I would therefore strongly advise that they remain at the farm for a period of at least two weeks to receive the proper diet in order to, at least, start them on the road to health. Unless this is done there is serious danger of permanent and grave injury to their health. Should they wish to remain it will be a pleasure to cooperate in providing the proper diet and medical supervision.

"In closing permit me, Governor, to express to you, the board of trustees and other prison authorities, my profound personal appreciation and thanks for your hearty cooperation. Without it the experiment would have been impossible, and the cause of pellagra would still be in dispute.

"Respectfully,

"JOSEPH GOLDBERGER,
"Surgeon in Charge Pellagra Investigations."

The reporter's account states further that, despite the earnest advice of Governor Brewer and Dr. Goldberger, all the members of the pellagra squad desired immediate release and that they all left for their homes Nov. 1, 1915. He says, further, "All members of the squad looked pale and emaciated and several of the number bore the sores on their bodies so distinctive of pellagra." These closing remarks of the reporter contain the only description of the lesions or their location which I have noted in this newspaper report.



JACKSON DAILY NEWS

THE ONLY DAILY NEWSPAPER PUBLISHED IN JACKSON.

JACKSON, MISS., MONDAY NOVEMBER 1, 1915

ANTI-ALIEN LABOR LAW DECLARED INVALID

DR. GOLDBERGER PRODUCES PELLAGRA AMONG CONVICTS

An Experiment of World-wide Interest, Made At the Rankin Convict Farm, Demonstrates Accuracy of Theory Recently Advanced.

DREAD DISEASE ROBBED OF ITS TERRORS

Dr Goldberger Put Twelve Convicts On An Unbalanced Diet On February 19th, Last, and Six of Them Now Have Pellagra in a Very Pronounced Form.

ADMIRAL FACES COURT MARTIAL; NEGLECT CHARGED

JAKE CALIFORNIA JAP RESTRICTIONS

Fig. 1.—Portion of first page of the Jackson *Daily News,* Nov. 1, 1915.

The next noteworthy account of this experiment (Goldberger, Joseph, and Wheeler, G. A.: Experimental Pellagra in the Human Subject Brought About by a Restricted Diet) appeared in *Public Health Reports* (Nov. 12, 1915, p. 3336). In this paper are the following statements:

"Of the 11 volunteers, not less than 6 developed symptoms, including a 'typical' dermatitis, justifying a diagnosis of pellagra. The nervous and gastro-intestinal symptoms were mild but distinct. The dermatitis was first noted between September 12 and September 24, 1915, or not later than five months after the beginning of the restricted diet. It is of great interest to note that in all our cases the skin lesions were first recognized on the scrotum. Later there appeared lesions on the backs of the hands in two cases and the back of the neck in one case. The scrotal lesions conformed to the type described and figured by Merk." ("Merk, Ludwig: Die Hauterscheinungen der Pellagra, Innsbruck, 1909, p. 24, Fig. 6.") "The conclusion is drawn that pellagra has been caused in at least 6 of 11 volunteers as the result of the restricted diet on which they subsisted."

The National Association for the Study of Pellagra held its third triennial meeting at Columbia, S. C., Oct. 21 and 22, 1915, or approximately one month after the appearance of the dermatitis in these cases. Dr. Goldberger attended this meeting. It may be pertinent to inquire why no mention of this alleged important discovery was made at this meeting and why recognized authorities on the diagnosis of pellagra, such, for example, as Dr. C. H. Lavinder, surgeon, Public Health Service, then president of the National Association for the

Study of Pellagra, or Dr. J. F. Siler, captain, Medical Corps, U. S. Army, then vice president and now president of this association, were not invited to see such alleged important cases. However, this is perhaps a matter of judgment on which stress should not be laid.

Another point of interest is the designation of the scrotal lesion as a "typical" dermatitis justifying a diagnosis of pellagra, and the statement further on that these lesions conformed to the type described and figured by Merk in Figure 6 on page 24 of his monograph. The accompanying illustration (Fig. 2) is a photograph of this figure in Merk's book. Merk observed this lesion on the scrotum in a single case seen in consultation with Deiaco. The description of the case is given in his discussion of unusual localizations of the cutaneous eruption on page 21 of his monograph. Referring to Deiaco's cases, Merk says:

"Ein sehr schoenes Beispiel ist ferner sein Fall 4 (F. Z. 31 jaehriger Maurergehilfe aus Sfruz im Nonstale), den ich durch guetige Vermittlung Deiaco's auch selbst zu sehen Gelegenheit hatte. Die ersten Anzeichen von Pellagra (unstillbare Diarrhöen) datierten auf etwa vier Jahre zurueck. Die Eruption, bei welcher die zu erwaehnenden atypischen Lokalisationen getroffen wurden, war, soweit sich aus der Anamnese schliessen liess, schaetzungsweise die dritte.

"Von typischen Stellen fanden sich 1. die Handruecken von den Naegeln der Finger an bis etwa drei Querfinger ueber das Handwurzelgelenk und manschettenfoermig auf die Beugeseite der Handwurzel uebergreifend. 2. Die Fussruecken von den Naegeln an, laengs des äusseren Fussrandes bis zu den Malleolis externis und am inneren Fussrande bis zu den inneren Knoecheln. 3. Ein rudimentaeres Casal'sches Halsband, nur in der Nackengegend bis zum hinteren Rande der Sternokleidomastoidei und knapp bis ans Haar.

"Die atypischen Lokalisationen des Falles waren gleichfalls symmetrisch und zwar an den Knieen, den Ellbogen und dem Skrotum.

"An den Knieen . . . grenzte sie sich knapp ueber den Kniescheiben in mehr oder minder buchtigen Linie nach obenzu scharf ab, reichte ungefaehr an die Kondylen heran, ohne die Vorderseite der Extremitaet zu verlassen und setzte sich an der Tibiakante zungenfoermig nach unten bis etwa zur Mitte der Unterschenkel fort.

"Aehnlich begann die Veraenderung an den Ellbogen . . . in Dreieckform mit der Basis knapp ueber denselben und hoerte, ueberall scharf begrenzt, mit einen zungenfoermigen Fortsatz etwa an der Grenze des oberen und mittleren Drittels der Ulnarkante auf.

"Die äusserst interessante Lokalisation an der Skrotalhaut . . . nahm fast genau symmetrisch an beiden Seiten der Raphe an der Unterseite eine etwa eifoermige Figur mit scharf abgegrentzen, leicht buchtigen Raendern ein."

Figur 6.

Atypische und sehr seltene Lokalisation des Erythems am Skrotum (Nach Deiaco).

Fig. 2.—Photographic reproduction of Figure 6 on page 24 of Merk's "Die Hauterscheinungen der Pellagra," Innsbruck, 1909.

TRANSLATION.—A further very beautiful example is his (Deiaco's) Case 4 (F. Z., aged 31, mason's helper, from Sfruz in Nonstale), whom I myself had the opportunity to see through the courtesy of Deiaco. The first manifestations of pellagra (uncontrollable diarrhea) dated from about four years previous. The eruption, in the course of which these particular atypical localizations were observed, was, so far as could be ascertained from the history, considered to be the third.

The following typical localizations of the eruption were present: (1) backs of the hands from the finger nails up to about three finger-breadths above the wrist joint and extending, in the form of a cuff, on the flexor surface of the wrist; (2) the dorsal surfaces of the feet from the toe nails along the outer foot margin to the external malleolus and along the mesial foot margin to the inner ankle bone; (3) a rudimentary Casal's necklace, involving only the back of the neck and reaching to the posterior border of the sternocleidomastoid muscles and exactly to the margin of the hair.

The atypical localizations in this case were also symmetrical and occurred on the knees, the elbows and on the scrotum.

On the knees . . . the upper outline was sharply defined and extended directly over the knee cap in a more or less curved line reaching almost to the condyles, without leaving the anterior surface of the limb. From this line the eruption extended downward, tonguelike, over the tibial crest, to about the middle of the leg.

The lesion on the elbows began in a similar way, . . . in the form of a triangle with its base just over the elbow and extended as a tonguelike process to about the junction of the upper and middle thirds of the ulnar crest, with a sharp outline all around.

The extremely interesting localization on the scrotum . . . was approximately oval, almost exactly symmetrical in respect to the median raphé, and was situated on the inferior surface. The outline was sharply demarcated and somewhat wavy.

It hardly seems possible that *a "typical"* can be regarded as a proper translation of the German word *atypische*, and yet from Dr. Goldberger's use of the reference the unwary reader might be led to think that his designation of this lesion as "typical" was supported by Merk. Concerning the recognition of such *dtypische* lesions as really pellagrous, Merk (Die Hauterscheinungen der Pellagra, p. 41) says:

"Im Allgemeinen kann nicht genug gewuenscht werden, dass die Diagnose solcher Unregelmaessigkeiten sehr breit fundiert werde und groesster Vorbedacht obwalte. Rein Atypien sind zweifellos ganz Singulaeres und duerften nur in vorgeschrittenden Faelle oder in spaeteren Krankheitsjahren zu erwarten sein."

TRANSLATION.—In general, it is very desirable that the diagnosis of such irregular eruptions should be securely supported by other evidence and should be very carefully considered. Pure atypical eruptions (i. e., unaccompanied by the typical eruption on the backs of the hands) are very unique and are to be expected only in advanced cases or in the later years of the disease.

Concerning the value of such lesions for the diagnosis of pellagra, Merk says on the same page:

"Die Atypien tragen zur Diagnose und Beurteilung des Gesamtleidens sozusagen nichts, zur Vervollkommung der klinischen Auffassung des Hautzustandes als solchen aber viel bei."

TRANSLATION.—The atypical eruptions contribute nothing to the diagnosis and critical judgment of the general disease, so to speak, but do contribute much to the completion of the clinical comprehension of the skin condition, as such.

It would appear, therefore, that the reference to Merk in support of the scrotal lesion as *a "typical dermatitis justifying a diagnosis of pellagra"* is, to say the least, somewhat unfortunate.

The next noteworthy account of this experiment on the convicts appeared in an editorial in THE JOURNAL, very promptly (Nov. 20, 1915, p. 1818). In this editorial occurs the statement, "These positive experiments demonstrate that pellagra is a nutritional disease, but they do not single out any particular article of food." This editorial notice and approval of the conclusions drawn has been a very potent factor in gaining for these conclusions a very general and favorable reception among the laity, as well as among those physicians and scientists who are not themselves very well acquainted with pellagra by personal experience or by study of the literature.

Recently a summary of the work of the U. S. Public Health Service on Pellagra has appeared (Goldberger, Joseph: Pellagra: Causation and a Method of Prevention, THE JOURNAL, Feb. 12, 1916, p. 471). In this, the statement in regard to the skin lesions in the convicts is repeated (p. 475), but now it is stated that the scrotal lesion conformed to the type described and figured by Merk (Hauterscheinungen der Pellagra, p. 24, Fig. 6) and also by Stannus (Stannus, Hugh S.: Pellagra in Nyasaland, *Tr. Soc. Trop. Med. and Hyg.*, 1913, vii, 32). The lesions on the hands, which appeared later in two cases, and the lesion on the neck, which was observed in one case, are again mentioned but not described, and no evidence is furnished which might enable one to differentiate these lesions from an ordinary solar erythema.

In fact, in all the papers mentioned the features of these lesions on the hands and on the neck, which might indicate their pellagrous character, are left entirely to the imagination. The emphasis appears to be laid on the scrotal lesions, and we find in this last paper the additional information that this lesion conformed to the type described and figured by

Stannus as well as that of Merk previously mentioned. Stannus, in his description of the rash of pellagra, on page 35, says:

"Special Situations: The scrotum may be involved, and on account of the special formation of the skin in this situation the rash has slightly different characters.

"In two cases with affection of the scrotum I found a condition of the skin in the groin folds resembling an intertrigo, which I think was really pellagrous."

The illustration given by Stannus, photographically reproduced in Figure 3, is manifestly merely an indication of the localization of the eruption; but even so, it is sufficient to prove that the scrotal lesion observed by him is not of the same type as the oval lesion lying beneath the scrotum symmetrically on the raphé, described by Merk, but is, in fact, anterior and at the sides of the scrotum. Stannus gives no further description of this lesion nor his reason for regarding it as pellagrous.

The claim and conclusion, very definitely and finally stated by Dr. Goldberger, that pellagra developed in these six convicts lacks, therefore, the support of any reliable published evidence. The scrotal lesions could not have conformed to both those of Merk and of Stannus, because these are themselves dissimilar. Furthermore, as indicated in very definite terms by Merk, the diagnostic value of such lesions is approximately nil, except when they occur along with the typical lesions on the hands, in which instances they suggest that the patient has suffered from pellagra a long time, possibly several years.

It would seem, therefore, especially pertinent to suggest that Dr. Goldberger should publish at an early date exact and full descriptions of all the symptoms and manifestations, together with available photographs of the lesions on which the diagnosis of pellagra was founded in these cases. Even if it should then appear, as now seems very doubtful, that one or more of the convicts actually had pellagra, the possibility of a preceding attack of the disease would require consideration. Meanwhile, the claim that pellagra has been produced by a restricted diet should be regarded with suspicion, and it would be well for those who have not yet acquired a knowledge of this disease by personal observation or by a somewhat comprehensive study of its literature to retain an open mind concerning the essential factors in its causation.

W. J. MACNEAL, M.D., New York.
Director, Department of the Laboratories, New York Post-Graduate Medical School and Hospital.

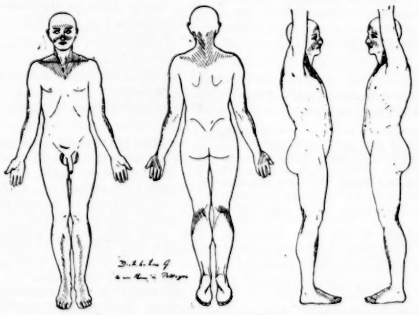


Fig. 3.—Photographic reproduction of the complete diagram showing localization of lesions, in Stannus' "Pellagra in Nyasaland" (Tr. Soc. Trop. Med. and Hyg., 1913, vii, 32).

The Alleged Production of Pellagra by an Unbalanced Diet — A Reply

To the Editor:—While preferring, pending the publication of our full report, not to enter into unnecessary discussion of the subject, the following brief statement is made to prevent, if possible, any misunderstanding of our position:

As the *Public Health Reports* in which appeared our note on the experiment on the Mississippi convicts, and from which Dr. MacNeal quotes, is not readily accessible to the general practitioner, we give the pertinent portion of this report herewith *in full,* italicizing the parts *not quoted* by Dr. MacNeal.

RESULTS

**Of the 11 volunteers, not less than 6 developed symptoms, including a "typical" dermatitis, justifying a diagnosis of pellagra. The nervous and gastro-intestinal symptoms were mild but distinct. The dermatitis was first noted between September 12 and September 24, 1915, or not later than five months after the beginning of the restricted diet. It is of great interest to note that in all our cases the skin lesions were first recognized on the scrotum. Later there appeared lesions on the backs of the hands in two cases and the back of the neck in one case. The scrotal lesions conformed to the type described and figured by Merk [Merk, Ludwig: Die Hauterscheinungen der Pellagra, Innsbruck, 1902, p. 24, Fig. 6]. *This experience would suggest that the scrotal lesion is a much more common early skin manifestation than has heretofore been believed. It would probably have escaped us but for the fact that it was our routine to examine these men, and the special control group, completely stripped.*

No person in the "camp" not of the volunteer squad has presented evidence justifying even a suspicion of pellagra.

The diagnosis in the above cases was concurred in by Dr. E. H. Galloway, secretary Mississippi State Board of Health, and Dr. Nolan Stewart, formerly superintendent Mississippi State Hospital for Insane, at Jackson, Miss.

We are very greatly indebted to Dr. Marcus Haase, professor of dermatology, Medical College of the University of Tennessee, Memphis, Tenn., and to Dr. Martin F. Engman, professor of dermatology in the Washington University Medical School, St. Louis, Mo., for assistance in excluding the other known dermatoses.

CONCLUSION

The conclusion is drawn that pellagra has been caused in at least 6 of 11 volunteers as the result of the restricted diet on which they subsisted.

ACKNOWLEDGMENTS

The above experiment was made possible by the cooperation of Gov. Brewer, whose interest was enlisted by the intervention of Dr. Galloway. To these gentlemen acknowledgments are due and are here made for their invaluable assistance. — *Public Health Reports,* Nov. 12, 1915, p. 3338.

It is evident from the foregoing that the phrase "typical dermatitis" has reference to the characters (bilateral symmetry, sharp delimitation, scaling, atrophy, etc.) of the skin lesions, entirely apart from their localization (genitals, hand or neck), and that the sentence "this experiment would suggest that the scrotal lesion is a much more common early skin manifestation than has heretofore been believed" clearly makes recognition of the opinion, theretofore prevailing, that the scrotal "localization" was not a common early skin manifestation.

Note is taken of Dr. MacNeal's difficulty in understanding how the scrotal lesion in our experimental cases could have "conformed to the type described and figured" by Merk and also to that by Stannus, as the two appear to him to be dissimilar. We may say, anticipating the publication of the full report, that among the six or seven cases presenting scrotal lesions there was sufficient individual variation to justify the statement that the localization and form of the lesion in some were remarkably like the figure in Merk and in some like that in Stannus, and to establish the conviction in our own minds that these are but nonessential variations in one type.

JOSEPH GOLDBERGER, M.D., Washington, D. C.
G. A. WHEELER, M.D., Washington, D. C.
United States Public Health Service.

Education, the Social Instrument.—The foundations of health education must be laid in the schools. This is of particular importance in the light of our modern conception of health work. In our more advanced communities we scarcely need speak longer of *public* health work. It is possible now to drop the word "public" and to talk of health. This means that personal health, personal hygiene, is to be the keynote of modern sanitation. The schools are, beyond comparison, the most valuable instruments for the instruction of society's members in the matters of hygiene.—Donald B. Armstrong, M.D., *American Journal of Public Health,* December, 1915.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SCOTOMA IN MORPHIN ADDICTION

To the Editor:—Does the habitual use of morphin have any influence on the field of vision, such as causing a constriction or scotoma?

F. P. C.

ANSWER.—Morphin does not ordinarily produce toxic amblyopia, yet experiments made on dogs and observations on human eyes have shown that opium and its derivatives do occasionally affect the optic nerve and retina, producing these visual disturbances. For example, Stieren (THE JOURNAL, March 12, 1910, p. 869) reported the occurrence of amblyopia with great reduction of vision and a large central scotoma, following the use of "habitina," a nostrum containing 16 grains of morphin and 8 grains of heroin to the ounce. The patient was taking from 6 to 8 teaspoonfuls daily for the cure of the morphin habit.

There have been no very recent contributions to this subject in ophthalmic literature. Wagner (*Klin. Monatsbl. f. Augenh.*, 1872) reported a case of amaurosis as a result of poisoning with morphin, and Laborde (*Compt. rend. Soc. de biol.*, Jan. 13, 1877) wrote on the action of morphin on the retina in chronic morphinism. Schiess-Gemuseus reported the case of a man, aged 65, who, after taking a morphin sleeping powder and having slept thirty hours became almost blind and deaf. After an interval of three weeks he had a right-sided hemianopia and a persistent contraction of the visual field on the left side.

VENARSEN AND OTHER PREPARATIONS OF THE INTRAVENOUS PRODUCTS COMPANY

To the Editor:—At the present prohibitory prices of neosalvarsan, the average patient cannot avail himself of that most useful therapeutic agent. The Loeser-Smith Company, 177 North State Street, Chicago [distributors for the Intravenous Products Company], is sending out literature advertising a number of products, among them venarsen and venomer, for the treatment of syphilis. Can you give me a line on the two drugs named?

F. C. SCHURMEIER, M.D., Elgin, Ill.

To the Editor:—What is venarsen, sold by the Kirby Instrument Company? Will it take the place of neosalvarsan in the treatment of syphilis?

G. B. TAYLOR, M.D., Cameron, Texas.

To the Editor:—Please inform me regarding the reliability of the preparations of the Intravenous Products Company of Denver.

R. G. YEATON, M.D., Brooklyn.

ANSWER.—Venarsen was examined by the Council on Pharmacy and Chemistry, and the report was published in THE JOURNAL, May 22, 1915, p. 1790. The Chemical Laboratory of the American Medical Association found the preparation to be "a simple solution containing approximately 9 grains of sodium cacodylate, 1/40 grain of mercury 'biniodide' and 3/4 grain of sodium iodid to each full dose." Sodium cacodylate is a well-known drug which is inferior in efficacy against syphilis to salvarsan or neosalvarsan. There appears to be no reason for administering it intravenously. The Council found that "no real evidence" had been presented for the claim of "lower toxicity and greater spirochaetacidal power than other known arsenic compounds," and that no justification had been established for the use of venarsen in tuberculosis and pellagra, diseases for which it is recommended by the exploiters. "Moreover, a careful physician would not give mercury and arsenic in fixed proportions." The preparation was refused recognition by the Council.

Venomer has not been examined by the Council. According to the manufacturers it is

". . . a sterile product containing in each 5 c.c. solution .016 Gm. (1/4 gr.) Mercury Iodide, .260 Gm. (4 grs.) Sodium Iodide, .065 Gm. (1 gr.) Sodium Dimethylarsenate, in a proper vehicle for intravenous administration."

It thus appears to be a variation on venarsen, containing considerably less sodium cacodylate and considerably more mercury and iodids. This preparation, like venarsen, prompts the comment that a careful physician would not give arsenic and mercury in fixed proportions.

Venodine, another preparation of the Intravenous Products Company, was examined by the Council (THE JOURNAL, June 26, 1915, p. 2155) and refused recognition because the therapeutic claims made for it were unwarranted, and the composition was unscientific.

The company manufactures a number of "intravenous specialties." The advertising lays stress on intravenous administration or "direct medication" as "a new and alluring field for the internist." In general, it may be said that, while there is a distinct field for intravenous administration in cases and conditions in which immediate results must be secured, the indiscriminate use which the advertising of the Intravenous Products Company tends to encourage is objectionable for many reasons: It incurs an unnecessary danger, and it puts the physician to needless trouble and the patient to unnecessary expense. In addition, such preparations as venarsen and venomer mean the use of ready made mixtures in conditions in which the physician should be alert to vary the prescription according to the changing requirements of the case.

TOTAL ACIDITY OF URINE

To the Editor:—Please give me Folin's method for the titration of acidity in the urine.

A. D. WILSON, M.D., Prescott, Ariz.

ANSWER.—To 25 c.c. of urine are added from 15 to 20 grams of powdered potassium oxalate, and a few drops of a 1 per cent. alcoholic solution of phenolphthalein. This is shaken thoroughly and titrated immediately with tenth normal sodium hydroxid solution. The acidity is then calculated as the amount of tenth normal sodium hydroxid solution required to neutralize the twenty-four hour amount of urine. It is on an average 617.

The method is described in practically all books on diagnostic methods.

FLOATING SPOTS—MUSCAE VOLITANTES

To the Editor:—Please give me information concerning the treatment of floating dark spots before the eyes.

B. F. HINES, M.D., Tyler, Tex.

ANSWER.—The spots floating in the line of vision are not pathologic formations in the vitreous, but are shadows cast on the retina by cells in the vitreous. They have been attributed to irritation of the retina, or congestion of the choroid, as well as to eye strain and to constitutional disturbances. Hyperesthesia of the retina and errors of refraction have also been incriminated. Except so far as they indicate the need of examination for errors of refraction and for improving the general condition, these floating spots —muscae volitantes—are not of importance. The condition is discussed in practically all textbooks on diseases of the eye. Of course, the vitreous should be examined for the presence of opacities of abnormal character.

LOWEST BODY TEMPERATURE

To the Editor:—What is the lowest body temperature that has been recorded, with survival of the patient? Please omit my name in answering.

J. A. K., M.D.

ANSWER.—A search of available literature shows that the lowest body temperature in a human being who survived was 75 F. The patient was a man, aged 34, who, while intoxicated, had been exposed to a temperature of 34 over night. This case was reported by Reineke (*Deutsches Archiv für klinische Medicin*, xvi, 15). A temperature as low as 71.6 is said to have been observed in one case. The authority in the latter case, however, does not seem entirely dependable.

Squint and the Evil Eye.—It is probable that the "evil eye," for which many hapless old women were harried to their death on the suspicion of witchcraft in "the good old days," was no more than a common squint, a "cast" in the eye, or "bossing," as it is called in many parts of the country to this day. . . . Not only was the squint thought to be of evil significance, but the defect itself was considered the work of evil spirits. In "King Lear" we find the following in the scene on the heath at night: "This is the foul fiend Flibbertigibbet: he begins at curfew, and walks till the first cock; he gives the web and the pin, squints the eye, and makes the harelip; mildews the white wheat, and hurts the poor creature of the earth."—N. Bishop Harman, *British Journal of Children's Diseases.*

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, April 4-5. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

CALIFORNIA: Los Angeles, April 4. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

COLORADO: Denver, April 4. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, April 11. Sec., Dr. E. P. Copeland, The Rockingham.

IDAHO: Boise, April 4. Sec., Dr. Charles A. Dettman, Burke.

MINNESOTA: Minneapolis, April 4-7. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

MONTANA: Helena, April 4. Sec., Dr. William C. Riddell, Helena.

NEW MEXICO: Sante Fe, April 10. Sec., Dr. W. E. Kaser, East Las Vegas.

OKLAHOMA: Oklahoma City, April 11-12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, April 4. Sec., Dr. Quevedo Baez, 66 Allen St., San Juan.

RHODE ISLAND: Providence, April 6. Sec., Dr. Gardner T. Swarts, 315 State House, Providence.

UTAH: Salt Lake City, April 3-4. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

THE PRACTICAL LICENSE EXAMINATION IN MINNESOTA

Abstract of a Report Received from a Visitor at a Recent Examination

The license examination given by the Minnesota State Board of Medical Examiners as observed by a visitor recently covered eleven subjects, eight of which were written and three practical. The written examinations were on three so-called "major" topics, medicine, surgery, and obstetrics and gynecology, and the "minor" subjects, materia medica, therapeutics, medical jurisprudence and preventive medicine, diseases of the eye, ear, nose and throat, anatomy and physiology. The visitor did not get a clear idea of the difference between a minor and a major subject, except that an applicant might fail in two minor topics, and still receive his license, if his average grade was sufficient. He could not do this with a major topic. Ten written questions were given in each subject, and the written examinations occupied the first two days of the examination period. The morning of the third day was given over to a laboratory examination—one hour for urinalysis, and two hours for examination in histology and pathology. Bacteriology was said to have been included formerly, but the visitor was informed that many of the older applicants damaged the specimens and the oil immersions to such an extent that it was thought feasible to abandon it.

The urinalysis was relatively simple, the time being too short for any of the more refined tests. Each student was given a specimen and a blank on which to note his findings. He was observed by the examiner while making the test, and marked on the method of procedure and on the accuracy of his report. The examination in histology and pathology covered two hours: one hour for the microscopic, and one hour for the examination of gross specimens. In the microscopic test each applicant was handed four numbered slides wrapped in tissue paper, and was informed that two were normal and two pathologic specimens. He was instructed to take them to a microscope, conveniently placed in the laboratory, and to describe and identify them. He was likewise required to describe and identify six of a number of gross specimens placed on the adjacent tables and numbered. There were about twenty of these specimens, and the visitor noticed that the examiners would assign the first six specimens to one, the last six to another, and the middle six to a third. The specimens displayed were all of very obvious lesions, such as united fracture of the femur contrasted with osteomyelitis of the same part; hemorrhage into the brain; the typical lesions of the small intestine; valvular diseases of the heart, and the like.

The afternoon was devoted to the bedside examination with special reference to physical diagnosis. In the light, pleasant wards of the University Hospital, each applicant was assigned a patient. He was given an hour or more to write the history, make a physical examination, and record his findings. No facilities for laboratory diagnosis were provided, but each applicant was informed that on request he would be given the findings of the attending physician as to blood, urine and the like.

As the first applicant signified the completion of his examination, he was taken into the adjacent room, and there presented to the two examiners the results of his examination, the examiner having before him the hospital record of the same patient. In connection with this report the examiner gave more or less of an oral test. For example, one applicant having a case of resolving pneumonia, which he had described in a very clear and creditable fashion, was asked, "In what diseases are râles found." Another had a case of myocarditis, and was asked to discuss the various heart murmurs, and the conditions in which they appeared. The visitor thought that rather insufficient attention was given to observing carefully the manner in which the applicant made this bedside examination. However, the applicants who appeared before the board at the time were especially high grade men, and it was hardly necessary to observe their work as closely as that of less experienced applicants.

Nebraska June Report

Dr. H. B. Cummins, secretary of the Nebraska State Board of Health, reports the written examination held at Lincoln, June 10-11, 1915. The total number of subjects examined in was 12; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 18, of whom 14 passed and 4 failed. Fifteen candidates were licensed through reciprocity. Three candidates were granted reregistration licenses by examination. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Chicago College of Medicine and Surgery	(1915)	80.2, 82.5, 84.4, 85
Hahnemann Medical College and Hospital	(1915)	86.4
Rush Medical College	(1915)	91.6
University Medical College, Kansas City	(1913)	75
University of Nebraska	(1915)	79, 83.8, 84.4, *
Eclectic Medical College	(1915)	79.6, 80
University of Pennsylvania	(1915)	84.1
FAILED		
Chicago Hospital College of Medicine	(1915)	71.2
University Medical College, Kansas City	(1913)	74.1
Lincoln Medical College	(1910)	70.6
John A. Creighton Medical College	(1915)	70.2

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado		(1912)	Colorado
Georgetown University		(1876)	Kansas
Chicago College of Medicine and Surgery		(1914)	Illinois
Bennett Medical College		(1912)	Illinois
Bennett College of Eclectic Medicine and Surgery		(1906)	Illinois
Hering Medical College		(1912)	Kansas
Northwestern University		(1913)	Illinois; (1914) Missouri
College of Physicians and Surgeons, Chicago		(1908)	Wisconsin
Southwestern Homeopathic Medical College and Hosp.		(1901)	Kentucky
University of Michigan Medical School		(1912)	Michigan
Barnes Medical College		(1910)	Illinois
St. Louis University		(1914)	Missouri
Milwaukee Medical College		(1903)	Wisconsin; (1905) Kansas

* No grade given.

Missouri Reciprocity Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports that twenty-one candidates were licensed through reciprocity from Jan. 8 to May 1, 1915. The following colleges were represented:

College	Year Grad.	Reciprocity with
Bennett Medical College	(1912)	(1913) Illinois
Chicago College of Med. and Surg.	(1909)	Illinois
Chicago Homeopathic Medical College	(1894)	Kentucky
College of Phys. and Surgs., Chicago.	(1883)	Kansas; (1912) Illinois
Northwestern University	(1910)	Illinois
Rush Medical College	(1887)	Iowa
Indiana University	(1908)	Indiana
College of Phys. and Surgs., Keokuk	(1878)	(1884) Iowa
University of Louisville	(1892)	Kentucky
Ensworth Medical College	(1913)	Iowa
St. Louis College of Phys. and Surgs.	(1910)	(1911) Oklahoma
St. Louis University	(1908)	Illinois
Washington University	(1910)	Illinois
Lincoln Medical College	(1909)	Nebraska
Meharry Medical College	(1908)	(1912) Nebraska
University of Vermont	(1896)	Vermont

Book Notices

Oral Surgery. A Treatise on the Diseases, Injuries and Malformations of the Mouth and Associated Parts. By Truman W. Brophy, M.D., D.D.S., LL.D., Professor of Oral Surgery, Chicago College of Dental Surgery. Special Chapters by Matthew H. Cryer, M.D., G. Hudson Makuen, M.D., William J. Younger, M.D., F. W. Belknap, M.D., and Calvin S. Case, M.D., D.D.S. Cloth. Price, $10. Pp. 1090, with 903 illustrations. Philadelphia: P. Blakiston's Son & Co., 1915.

This work contains many varied subjects. A glance at the table of contents reveals at least some suggestion of most of the subjects in laboratory and clinical medicine. The book opens with a chapter which the author has termed "surgical" bacteriology. One often wonders whether the general subject of bacteriology were not more satisfactorily and accurately treated in works limited to the subject. This applies equally to the parent subject, pathology. Treatises on special or applied pathology and bacteriology belong more directly to the specialist. In Chapter 6, on Tumors, the discussion is general in character, with little attention to the mouth and jaws. The subject of mesothelial tumors of the mouth is an interesting one. Chapters 26 to 30 deal with harelip and cleft palate. The author's most notable work is illustrated in these chapters. Even those who do not agree with some of his methods must admit that Dr. Brophy has made as good a contribution to the surgery of cleft palate and harelip as any other American. If the book contained nothing else, these chapters would place the volume among the most useful works on regional surgery. While the volume is not well adapted to class room uses, it will render good service to students and practitioners of medicine and dentistry. The book is profusely illustrated, and represents an enormous amount of labor.

Post-Mortem Examinations. By William S. Wadsworth, M.D., Coroner's Physician of Philadelphia. Cloth. Price, $6 net. Pp. 598, with 304 illustrations. Philadelphia: W. B. Saunders Company, 1915.

The author of this book has evidently had an extensive experience in the field of which he writes, and has given much thought to the work in which he is engaged. A careful reading of the book, which is highly interesting, leaves one with the regret that he has not succeeded better in transmitting the fund of information which he undoubtedly possesses and uses. Each topic taken up results in criticism of all work and thought previously recorded on the subject, often accompanied by useful suggestions as to the errors to be avoided, but also often with very little guidance as to the proper way to secure the best results. There are more warnings than directions, more advice on what to do or not to do than information as to how to do it.

In fact, it may fairly be said that the author scolds his way through the subject of postmortem examinations and all that appertains thereto. A characteristic sample of the prevailing style of discussion is contained in this quotation: "The circulation of the brain is so important, and the plates in the anatomies are so beclouded by the artist's fancies for decorative pictures, that I have introduced several figures which, if carefully studied and compared, will give a very different conception of the blood supply than that presented by the strange chromos. At the postmortem it matters but little what foolish name has been attached to a part if the object is to understand the condition and the relation of cause and effect, because one must think in terms of things, not names. The circulation of the brain as described appears to be but crudely comprehended even in our best works."

As all existing work and opinions seem faulty to the writer, it is perhaps not unfair to state that not all of his ideas will meet the approval of other pathologists; for example, "The hair is characteristic of chronic gastritis," and many other statements of the class of "foot-of-the-bed diagnosis."

The mutilating method of removing the brain, which he so warmly advocates, will undoubtedly cause indignant protests from those who demand most circumspect treatment of this tender and intricate structure. Many of the comments on chemical matters are also more than puzzling to a chemist. Even after a tirade on the ignorance of others concerning the neck, there is no mention of the excellent method of studying this part of the body by carrying a transverse incision at the level of the clavicles and reflecting the skin upward.

The statement that "too much stress is laid on fat emboli" is entirely contrary to the observations made by many careful men. One wonders whether the author has sought for fat emboli systematically by appropriate methods in suitable cases. There is far too little emphasis on the utilization of histology and bacteriology in postmortem examinations. In a modern work on this subject, one would expect to find a good chapter on bacteriologic methods and principles as applied to the special problems of the mortuary, but here we find only a small discursive section devoted to generalities.

Nevertheless, despite the defects of presentation and the lack of systematic instruction, there is a great deal of value in the book, and much can be found in it that will be of value to the experienced pathologist. Many original ideas appear, and helpful suggestions and sound advice abound. The insistence on free modification of the technic in accord with the case under investigation is more needed than might be imagined, as also is the advice to postpone necropsy for due preparatory study and reflection in certain cases, especially those involving toxicologic matters. But one always wishes that the author's evident knowledge and skill in his subject were more successfully imparted to the reader.

A Mechanistic View of War and Peace. By George W. Crile. Edited by Amy F. Rowland. Cloth. Price, $1.25. Pp. 104, with illustrations. New York: The Macmillan Company, 1915.

This little volume is based on the proposition that "man and other animals are physicochemical mechanisms," and it will find approval or disapproval at the hands of the reader in accordance with the reader's acceptance or nonacceptance of the fundamental proposition. If man is only a physicochemical mechanism, his actions must be governed at all times by purely physicochemical laws. Evolution, if accepted (and there are few who do not accept it today), cannot be limited simply to the development of species; it must be universal in its application; hence it is not difficult for one to look on the present situation abroad as an evolutionary process, and it is perfectly evident that the author so considers it. He goes even farther than this. He attempts to show a definite relation between particular environmental conditions and the conduct and actions of individuals involved; in other words, man is only a machine, and must inevitably react to stimuli along definite lines. That the theory is fundamentally correct perhaps will be widely admitted, but the factors involved are so numerous and many of them so little understood that much difficulty will be encountered in applying the principle to specific events. The author has made a very readable explanation on a mechanistic base of war and its effects, and the fact that he has had personal experience with many of the phases of the subject presented will add much to the interest of the work.

The Starvation Treatment of Diabetes. With a Series of Graduated Diets Used at the Massachusetts General Hospital. By Lewis Webb Hill, M.D., Children's Hospital, Boston, and Rena S. Eckman, Dietitian, Massachusetts General Hospital. With an Introduction by Richard C. Cabot, M.D. Second Edition. Cloth. Price, $1. Pp. 131. Boston: W. M. Leonard, 1916.

The first edition of this work was printed in August, 1915. The interest in the Allen treatment apparently early exhausted the edition, and the second one has appeared. It consists of several pages devoted to a description of the treatment, illustrated by a series of eleven case reports and a number of graphic charts, showing the method of recording cases used by the authors. A few pages are devoted to the examination of the urine, and the remaining two thirds—about ninety pages—to diet. Numerous recipes, suggested diet lists and tables of food values are included. In reviewing the first edition, regret was expressed that the price of the book was out of all proportion to its cost of production. This criticism still applies, yet not to the extent that it did, since the new edition has a number of additional pages.

Medicolegal

Duty of Health Officer Restricted by Lack of Funds

(Gould vs. Keller, Health Officer (S. D.), 154 N. W. R. 649)

The Supreme Court of South Dakota affirms an order denying a writ of mandamus which the plaintiff sought to compel the health officer of Sioux Falls to remove a smallpox patient from his home to the pesthouse or city hospital, or some other safe and proper place. The court says that an ordinance of the city provided that it should be the duty of the health officer to visit and examine all sick persons who should be reported to him as being sick or supposed to be sick with any infectious or pestilential disease, and cause all such infected persons to be removed to the pesthouse or city hospital, or some other safe and proper place. The smallpox patient was an employe in the home of the plaintiff. From the latter the health officer received proper notice, and visited the patient, but, instead of removing her from the plaintiff's house, he quarantined the house. It appeared that the city had no city hospital or pesthouse, and that it had not provided any other "safe and proper place" for the care of persons suffering from "infectious or pestilential disease." The health officer alleged that he was powerless to do more than he had done in the case. The trial court was right in refusing the writ prayed for. It was not shown that there was any ordinance under which the health officer was provided with, or given the power to obtain, the means or funds necessary to provide a suitable place and the necessary equipment for the care of the patient in question. It was not shown that the health officer had been provided with such means from any source. Sioux Falls is a city under commission. No officer of such city can expend any of its funds unless the appropriation ordinance for the current year provides a fund for the purpose for which the expense is sought to be made. There was no showing that the city had, by an appropriation ordinance, provided any fund on which warrants could have been drawn to provide any place for the care of this smallpox patient. Certainly no officer should be compelled to perform any duty involving the expenditure of funds, where no funds have been provided with which to meet such expenditure. How could this health officer comply with the writ prayed for? He could not compel the commissioners of the city to provide a place, and he could not be compelled to provide a place at his own expense.

Death from Typhoid Fever from Drinking Polluted Water Accidental

(Vennen vs. New Dells Lumber Co. (Wis.), 154 N. W. R. 640)

The Supreme Court of Wisconsin holds that the facts pleaded showed that the death from typhoid fever of an employee of the defendant, named Vennen, was caused by accident while performing service growing out of and incidental to his employment. The court says that the defendant was engaged in operating a manufacturing lumber establishment located on the Chippewa River, in the city of Eau Claire. In connection with its establishment it maintained an outhouse and two toilets for its employees working there and a toilet in its principal office building. All of the sewage from these toilets was discharged into the river near the defendant's establishment. The pleadings alleged that the defendant, in supplying water for its boilers, not only secured water from the city water works, but also used water from the river, which was obtained by means of intake pipes; that it was negligent in placing its intake pipes in such location that they carried into the boilers water that was contaminated by the sewage; and that this water, through the defendant's negligence, became mixed with the water from the city waterworks, because of improper connecting pipes. It was further alleged that the defendant negligently permitted and caused the employees to drink of this polluted water, and thereby caused the said Vennen to become sick with typhoid fever, which resulted in his death. The facts alleged showed that the parties to the action were subject to the workmen's compensation act. The inquiry then was: Was Vennen's death proximately caused by accident while he was "performing services growing out of and incidental to his employment"? The inference from the alleged facts was reasonably clear that at the time of the alleged injury resulting in his death he was "performing services growing out of and incidental to his employment." The contention that an injury resulting from carelessness or negligence is not one that can be said to have been accidentally sustained in the sense of the compensation act was not well founded. In the popular sense the words as used in the compensation act referring to a personal injury accidentally sustained by an employee while performing services growing out of and incidental to his employment include all accidental injuries, whether happening through negligence or otherwise, except those intentionally self-inflicted. The term "accidental," as used in compensation laws, denotes something unusual, unexpected, and undesigned. The nature of it implies that there was an external act or occurrence which caused the personal injury or death of the employee. It contemplates an event not within one's foresight and expectation resulting in a mishap causing injury to the employee. Such an occurrence may be due to purely accidental causes, or it may be due to oversight and negligence. The fact that Vennen became afflicted with typhoid fever while in the defendant's service would not in the sense of the statute constitute a charge that he sustained an accidental injury, but the allegations went further and stated that this typhoid affliction was attributable to the undesigned and unexpected occurrence of bacteria in the drinking water furnished him by the defendant, as an incident to his employment. These facts and circumstances clearly charged that Vennen's sickness was the result of an unintended and unexpected mishap incident to his employment. These allegations fulfilled the requirements of the statute that the drinking of the polluted water by Vennen was an accidental occurrence, while he was "performing services growing out of and incidental to his employment." It was alleged that the consequences of this alleged accident resulted in afflicting Vennen with typhoid disease, which caused his death. Diseases caused by accident to employees while performing services growing out of and incidental to their employment are injuries within the contemplation of the workmen's compensation act.

Destruction of Diseased Animals to Protect Public Health

(Durand et al. vs. Dyson et al. (Ill.), 111 N. E. R. 143)

The Supreme Court of Illinois, in affirming a decree in favor of the defendants, the state veterinarian and the members of the state board of live stock commissioners, holds that they and their agents and employees should not be enjoined against slaughtering, in accordance with the statute, a herd of cattle afflicted with the hoof and mouth disease. The court says that cattle afflicted with a dangerous and contagious disease are public nuisances as defined by the common law, and under the common law such a nuisance could not be legalized because it invaded the peace and safety of the people. Prevention of the spreading of dangerous diseases among cattle is now universally recognized in this country as within the domain of the police power, as it is so essential to the public safety and health. It is also now generally recognized that where the disease among cattle is so very dangerous and of so contagious or infectious a character as to be communicable to human beings through the consumption of the flesh or milk of such animals as have the disease, as the foot and mouth disease is generally considered to be, legislatures may, and should, confer on boards or commissions the power to destroy animals afflicted with such a disease when thought to be necessary to public safety. A Massachusetts case upholds a statute authorizing summary proceedings to kill horses with the glanders. Proceedings for the destruction of property in many cases must necessarily be summary and without a previous trial or hearing. It would certainly not be contended by any one that a hearing ought to be had before demolishing a building in the path of a conflagration that was rapidly destroying a city, in case of the isolation and confinement of a person afflicted with smallpox or with the bubonic plague, or before

the destruction of a dog suffering with rabies. In some cases hearings may be reasonably had before the destruction of property, but when the question is one regarding the destruction of animals or food which is not only unfit for human use, but may be fatal to those who use it, the emergency is such that the legislature should have the entire disposition of the matter without being subject to being reviewed and its acts declared void by the courts.

Roentgen-Ray Plates May be Shown to Juries

(Lupton vs. Southern Express Co. (N. C.), 86 S. E. R. 614)

The Supreme Court of North Carolina, in affirming a judgment in favor of the plaintiff for damages for personal injuries alleged to have been caused by having a heavy truck pass over one of his feet, holds that there was no error in permitting a physician who had made roentgenograms of the plaintiff's feet to exhibit the plates to the jury. The court says that there was no objection to the description of the injury as disclosed by the Roentgen-ray plates. The exception was only to the exhibition of the plates to the jury, and, as there was nothing to show any variance between the plates and the description given by the witness, the exception might be disposed of on the ground that the ruling permitting the jury to see the plates, if erroneous, was harmless. The court is, however, of the opinion that it was competent to introduce the plates and to permit the jury to see them. It has been held in several cases in the North Carolina Reports that the ordinary photograph, when shown to be a true representation and taken under proper safeguards, is admissible in evidence, and the same rule prevails as to photographs taken by the Roentgen-ray process. The rule, based on want of confidence in the intelligence of jurors, formerly prevailed that jurors might hear, but could not see; but it has been expressly repudiated in North Carolina. It was true that the witness who made the roentgenograms did not say in so many words that the photograph was an accurate and true representation of the condition of the foot, but this was a reasonable inference from his evidence. He had sworn that he would tell the truth; he was an expert and experienced in the manipulation of the Roentgen ray, and his whole evidence showed that he believed the photographs to be a true representation of the condition of the foot.

Society Proceedings

COMING MEETINGS

Alabama State Medical Association, Mobile, April 18.
American Assn. of Genito-Urinary Surgs., Washington, D. C., May 9-10.
American Association of Path. and Bact., Washington, D. C., May 9-11.
American Climatological and Clin. Assn., Washington, D. C., May 9-11.
American Dermatological Association, Washington, D. C., May 8-10.
American Gastro-Enterological Association, Washington, D. C., May 8-9.
American Gynecological Society, Washington, D. C., May 9-11.
American Laryngological Association, Washington, D. C., May 9-11.
Amer. Laryn., Rhin. and Otol., White Sulphur Sprgs., W. Va., May 5-6.
American Medico-Psychological Association, New Orleans, April 4-7.
American Ophthalmological Society, Washington, D. C., May 9-11.
American Orthopedic Association, Washington, D. C., May 8-11.
American Otological Society, Washington, D. C., May 8-9.
American Pediatric Society, Washington, D. C., May 8-10.
American Society of Tropical Medicine, Washington, D. C., May 9-11.
American Surgical Association, Washington, D. C., May 9-11.
American Urological Association, St. Louis, April 17-19.
Arizona Medical Association, Phoenix, April 26-27.
Arkansas Medical Society, Texarkana, May 2-4.
Association of American Physicians, Washington, D. C., May 9-11.
California State Medical Society, Fresno, April 18-20.
Cong. Am. Phys. and Surgs. of No. Am., Washington, D. C., May 9-10.
Florida Medical Association, Arcadia, May 10-12.
Georgia Medical Association, Columbus, April 19-21.
Iowa State Medical Society, Davenport, May 10-12.
Kansas Medical Society, Topeka, May 3-5.
Louisiana State Medical Society, New Orleans, April 18-20.
Mississippi State Medical Association, Greenville, May 9-11.
Missouri State Medical Association, Excelsior Springs, May 8-10.
National Assn. for Study and Prev. of Tuberc. Wash., D. C., May 11-12.
North Carolina State Medical Society, Durham, April 18.
North Dakota State Medical Association, Devils Lake, May 10-11.
Oklahoma State Medical Association, Oklahoma City, May 9-11.
South Carolina Medical Association, Charleston, April 18-20.
Tennessee State Medical Association, Knoxville, April 4-6.
Texas State Medical Association, Galveston, May 9-11.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

March, CLI, No. 3, pp. 313-468

1 *Causes of Death in Diabetes. E. P. Joslin, Boston.
2 *Linitis Plastica. J. Sailer, Philadelphia.
3 Clinical Study of Pain Arising From Diaphragmatic Pleurisy and Subphrenic Inflammation. J. A. Capps, Chicago.
4 Cerebral Nerve Disturbances in Exophthalmic Goiter. Report of Case Associated With Bulbar Paralysis. G. J. Heuer, Baltimore.
5 *Metabolism and Treatment of Rheumatoid Arthritis. R. Pemberton, Philadelphia.
6 Syndrome of "Coagulation Massive et Xanthochromie" Occurring in Case of Tuberculosis of Cervical Spine. R. S. Bromer, Boston.
7 Syphilitic Bursitis; Report of Case Involving Both Knees. R. W. Scott, Cleveland.
8 Cardiospasm; Report of Case. B. B. V. Lyon, Philadelphia.
9 *Case of Polyposis of Colon. H. W. Soper, St. Louis.
10 Myxedema and Nervous System; Report of Cases. R. L. Pitfield, Philadelphia.
11 Five Years' Experience in Treatment of Pulmonary Tuberculosis by Artificial Pneumothorax. M. E. Lapham, Highlands, N. C.
12 Rupture of Saccular Dissecting Aneurysm of Right Vertebral Artery. F. D. Weidman, Philadelphia.
13 Calcium and Bence-Jones Protein Excretion in Multiple Myeloma. N. R. Blatherwick, New York.

1. **Causes of Death in Diabetes.**—Of 945 cases of diabetes seen by Joslin 921, or 97.5 per cent. have been traced, and out of this number 425 have died. The actual causes of death are known in all but 5 patients among those dying without coma. Sixteen patients died from miscellaneous causes. Seventeen died of cancer. Cancer apparently developed after the diabetes in 8 cases, and may have developed before or coincident with the diabetes in 7 others. Pulmonary tuberculosis was responsible for the death of 16 patients. Cardiorenal and vascular changes, uncomplicated by coma, caused the death of 62 patients. There were but 36 deaths from infections. Of general infections, pneumonia heads the list with 15 deaths and influenza claims 3. Of local infections, septic and gangrenous legs account for 9, carbuncles for 4 and acute fulminating appendicitis for 2. Coma was fatal to 273 cases (64.24 per cent.), thus causing two thirds of the deaths. Analyzing the deaths from coma, Joslin emphasizes certain points. First, ether anesthesia is a burden which a light case of diabetes may easily bear; it may change a moderate to a severe case, and to a severe case it may be fatal. Second, diabetic patients with vulnerable kidneys are peculiarly susceptible to coma because the power of elimination of acid bodies is impaired. Third, an infectious process renders the diabetes more severe. A considerable percentage of the cases of coma occurred in connection with either general or local infectious processes. Fourth, an occasional case of coma is precipitated in a severe diabetic by mental excitement. Fifth, there is a definite influence exerted by a fat protein diet or extreme fat diet. Although 90 per cent. of diabetic patients will quickly and safely become sugar free by simple fasting, for the remaining 10 per cent., which would include cases already showing acid poisoning, elderly patients and diabetics with infections, Joslin suggests that prior to giving any fasting treatment a possible acidosis be anticipated by taking away the cause, namely, by the absolute exclusion of fat from the diet, but otherwise making no change in the diet or in the habits of the patient. After two days, or longer if desired, omit protein, another, though lesser contributing factor to acidosis, and thereon daily halve the carbohydrate hitherto unchanged in the diet, until 10 gm. are reached and then proceed with routine fasting treatment. Vomiting at the onset of coma usually presages death, because the patient is deprived of fluid with which to eliminate acids. Years ago in seeking for the cause of edema in a severe diabetic patient who was taking sodium bicarbonate Joslin withdrew sodium chlorid from his diet. Prompt loss of weight followed and symptoms of coma appeared. Since then he has been careful not to restrict salt. He also points out that large doses of sodium bicarbonate frequently are detrimental to a patient with threatening coma.

2. **Linitis Plastica.**—One month after an operation for double inguinal hernia Sailer's patient developed symptoms of linitis plastica. There was a persistent patulous condition of the pylorus and a persistent absence of free hydrochloric acid. Pepsin was secreted continuously, although, in the absence of free hydrochloric acid, it did not act on proteids, but it always became active as soon as the gastric contents were diluted with hydrochloric acid solution. Pus was frequently found at first; occult or visible blood never; lactice acid never. The process began in the pyloric region. The stomach wall in this region was distinctly thicker, somewhat harder and appeared more altered than the remaining portion of the stomach, although the thickening of the gastric wall extended as far as the fundus. Distinct evidence of improvement occurred twice during the course of the disease. He became so much stronger that he was able to undertake a considerable degree of outdoor exercise, walking as much as four or five miles across the country almost daily. When he became rapidly worse an operation was advised. The stomach was hard, contracted and bound by firm adhesions to all the surrounding tissues. A jejunostomy by the Witzel method was done. After the operation the patient vomited almost constantly. Very little food could be given by the tube and some of it returned through the wound. He rapidly lost weight and strength until he became a mere skeleton, and about three weeks after the operation died.

5. **Metabolism and Treatment of Rheumatoid Arthritis.**—In cases rendered free, or nearly so, of acute symptoms by dietary means, exacerbations have been caused as an "experimentum crucis," by the ingestion of pure carbohydrate. On the withdrawal of this the symptoms have again subsided. The conclusion seems unavoidable to Pemberton that carbohydrate is a factor in the etiology and treatment of many cases of this disease. Contemporaneously with natural or induced exacerbations of the disease there seems to be a tendency for the urine to show a decreased acidity, as measured by the hydrogen ion concentration. Observations on the carbon dioxid tension of the alveolar air in Pemberton's nineteen cases showed no great departure from the normal. The nonprotein nitrogen and urea of the circulating blood in uncomplicated cases of rheumatoid arthritis, examined both during ill health and convalescence, fall well within the normal range.

9. **Polyposis of Colon.**—In Soper's case the entire colon was successfully resected for polyposis. The patient was only 8 years of age.

American Journal of Physiology, Baltimore

March, XL, No. 1, pp. 1-151

14 Salivary Factor and Its Relation to Dental Caries and Immunity in Dementia Praecox and Epilepsy. J. A. Marshall, San Francisco.

15 *Effects of Subcutaneous Injection of Organ Extracts on Flow of Pancreatic Secretion. J. Rogers, J. M. Rahe, G. G. Fawcett and G. S. Hackett, New York.

16 *Acceleration of Growth After Retardation. T. B. Osborne and L. B. Mendel, New Haven, Conn.

17 *Evidence That Active Principle of Retroperitoneal Chromaphil Tissue Has Same Physiologic Action as Active Principle of Suprarenal Glands. M. E. Fulk and J. J. R. MacLeod.

18 Reactions of Striated Muscle to Potassium Chlorid Solutions. E. B. Meigs and W. G. Atwood, Woods Hole, Mass.

19 *Influence of Age on Venous Blood Pressure in Man. D. R. Hooker, Baltimore.

20 Chief Physical Mechanisms Concerned in Clinical Methods of Measuring Blood Pressure. C. Brooks and A. B. Luckhardt, Chicago.

21 *Omentum as Factor in Absorption from Peritoneal Cavity. P. G. Shipley and R. S. Cunningham, Baltimore.

42 *Studies in Blood Pressure Estimation by Indirect Methods. Mechanism of Compression Sounds of Korotkoff. J. Erlanger, St. Louis.

15. **Effects of Organ Extracts on Pancreatic Secretion.**—The authors found that the effect of the subcutaneous injection in dogs of the residue, or noncoagulable portion, of an aqueous extract of the liver is the immediate and vigorous stimulation of the external secretion of the pancreas. The residues of the thyroid and thymus produce a somewhat less vigorous and later response. The residues of the pituitary and parathyroid glands and of the spleen and pancreas are inert. The residue of the suprarenal gland, like epinephrin, vigorously inhibits the intestinal secretion of the pancreas. Only the residue or noncoagulable portion of an aqueous extract of the above mentioned organs shows any appreciable effect on the intestinal secretion of the pancreas. From these, and from the tests previously reported, the authors conclude that the residue or noncoagulable portion of an aqueous extract of the pituitary, pineal, parathyroid, thymus and suprarenal glands and of the liver, spleen and pancreas contains practically all of the material from each of these organs which can directly and immediately affect through the circulation the functional activity of any other organ.

16. **Acceleration of Growth After Retardation.**—Records are presented by Osborne and Mendel to show that after periods of suppression of growth, even without loss of body weight, growth may proceed at an exaggerated rate for a considerable period. This is regarded as something apart from the rapid gains of weight in the repair or recuperation of tissue actually lost. Despite failure to grow for some time the average normal size may thus be regained before the usual period of growth is ended.

17. **Physiologic Action of Chromaphil Tissue.**—Acid extracts of the retroperitoneal chromaphil tissue of man, the dog, the cat, the rabbit, the guinea-pig, the white rat, the calf, the sheep and the pig according to Fulk and Macleod have the same physiologic action on intestinal and uterine muscle as the active principle of the medulla of the suprarenal glands.

19. **Influence of Age on Venous Pressure.**—According to Hooker there is a progressive rise in venous pressure practically throughout life.

21. **Absorption from Peritoneal Cavity by Omentum.**—True solutions and pseudo solutions are absorbed through the blood vessels of the omentum very rapidly. The kidneys of animals killed three hours after immersion of the omentum in the citrate cyanid solution when fixed in acid formalin show macroscopically on section a deep blue color in the papillae and the cortex due to precipitation of the Prussian blue by the acid. Masses of Prussian blue are visible on section about the portal vessels in the liver. Spread preparations of the omentum and microscopic sections show the omental veins to be filled with Prussian blue precipitated in granules so fine as to have the appearance of an homogeneous mass when examined with the highest power dry lenses. Finely divided precipitates of Prussian blue can be seen in the cytoplasm of the endothelial cells themselves, though the cell nuclei are always free from any granular deposit. Experiments with trypan blue were especially striking; an hour's exposure of the omentum to a 1 per cent. solution of the dye resulted in a very perceptible staining of the animal's skin and mucous membrane. Granules of particulate material are absorbed along the same channels, since after exposure of the omentum to filtered India ink, carbon granules may be found in the portal veins. The granules absorbed are very small and in cases in which masses of ink were found they were evidently aggregates of very fine particles. The aggregates seem most liable to occur if the circulation is for any reason poor or impeded.

The drainage of particulate matter from the serous cavities via the blood stream is most extraordinary and was most unexpected since the blood vessel wall is not credited with permitting the passage of anything but fluids with a possible exception in the capillaries of the intestinal mucosa. It is probable that only the very small granules of ink pass into the omental veins. Microscopic sections of the livers of these animals show that some ink undergoes phagocytosis by the capillary endothelium but most is found as free granules in the lumen of blood vessels. In all a considerable amount of granular material must leave the cavity of the peritoneum through omental veins. In none of the sections or the numerous span preparations which they have made by various methods have Shipley and Cunningham been able to find lymphatic vessels in the omentum in any animal and sections show clearly that even if such vessels exist omental lymphatics have no important rôle in the drainage of the peritoneal cavity. On the other hand the omentum plays a very large part in the actual drainage of the peritoneal cav-

ity. True and pseudo solutions and granules of particulate material find their way through omental vessels to the organs of the body destined for their ultimate reception and storage or destruction and excretion, and the path by which they leave the omentum is not a lymphatic but a hemic one.

22. **Mechanism of Compression Sounds of Korotkoff.**—The more important observations and conclusions of Erlanger's investigations show that the Korotkoff sounds are produced by water hammer.

Annals of Surgery, Philadelphia

March, LXIII, No. 3, pp. 257-384

23 Classification of Tumors. C. M. Moullin, London.
24 *Acute Dilatation of Stomach Complicating Operations on Extremities. I. Cohn, New Orleans.
25 Reversal of Circulation in Lower Extremity. J. S. Horsley, Richmond, Va.
26 *Conservative Treatment of Gangrene of Extremities Due to Thrombo-Angeitis Obliterans. W. Meyer, New York.
27 *Hypophysial Disorder in Mammary Cancer and Its Relation to Diabetes Insipidus. S. Sekiguchi, Japan.
28 Use of Warmed Ether Vapor for Anesthesia. F. B. McCarty and B. F. Davis, Chicago.
29 Toluol as Storing Fluid for Surgical Catgut. A. Rogers, Brooklyn.
30 *Acute Secondary Tuberculous Splenomegaly: Splenectomy. J. S. Wight, Brooklyn.
31 *Anatomic and Physiologic Subdivisions of Duodenum; Pathogenesis of Ulcer. G. Jefferson and G. Flumerfelt, Victoria, B. C.
32 Ulcer of Duodenopyloric Fornix. G. Jefferson, Victoria, B. C.
33 Cystic Dilatation of Vermiform Appendix. G. E. Dodge, Tucson, Ariz.
34 Megacolon. J. C. Hubbard, Boston.
35 Sigmoidovesical Fistula; Report of Case. R. C. Bryan, Richmond, Va.
36 Stitch to Assist in Closure of Posterior Sheath of Rectus Above Douglas' Semilunar Fold. N. W. Green, New York.
37 Artificial Impaction of Hip Fracture. F. J. Cotton, Boston.

24. **Acute Dilatation of Stomach.**—Five cases including one of his own are cited by Cohn and his summary expresses his opinion: The nerve supply of the stomach and intestines is intimately connected. The inhibitor nerve supply of the stomach and intestine is identical—the splanchnic. Strong impulses applied to the splanchnics cause a cessation of peristalsis. Whether these impulses be the result of trauma, infection or what not, the effect here, as in shock, is the same—an acute dilatation of the stomach, with or without dilatation of the duodenum and, in some instances, part of the jejunum. Obstruction by the mesentery and its vessels is not present in over 50 per cent. of the cases. For the above reasons it seems most plausible that we are dealing with a disturbance of innervation, rather than a mechanical obstruction due to compression by the mesentery and its vessels.

26. **Gangrene Due to Thrombo-Angeitis Obliterans.**—Meyer suggests that in the treatment of typical thrombo-angeitis obliterans the following sequence might be observed: (1) superheated air; best combined with (2) systematic hypodermoclysis of Ringer's solution. If these simpler conservative means prove of no avail, conservative operative measures are indicated, namely, (3) tying of the femoral vein or arteriovenous anastomosis. Internally, a simultaneous administration of organotherapeutic preparations deserves a careful test. Intravenous injections of anticoagulating substances, as, for instance, of a 2 per cent. watery solution of sodium citrate, may prove to be a useful adjuvant to the systematic hypodermic administration of Ringer's solution. If gangrene has set in, it can, of course, not be made good. What has died, remains dead. But its progress may be stayed by the hypodermoclysis treatment; old and obstinate ulcerations may heal; the otherwise uncontrollable pain can be relieved.

27. **Hypophysial Disorder in Mammary Cancer.**—It is sometimes clinically noted that polyuria occurs in the last stage of cancer of the breast without any renal disorders. In Sekiguchi's two cases of cancer metastasis in the posterior lobe of the hypophysis no pathologic changes were found in the gray matter of the third ventricle. These cases can be well understood by Schaefer's theory. The pars intermedia, compressed by tumor mass in the pars posterior, developed a hypersecretory function and this secretion stimulated the epithelium of the kidneys to the overproduction of urine.

30. **Acute Secondary Tuberculous Splenomegaly.**—Wight's patient was a boy 8 years of age. The spleen weighed 950 gm., it measured 19 cm. long, 9.5 cm. broad, 4.5 cm. thick, surface irregular and microscopic examination showed it filled with very young tubercles. Four months later the boy died. The tuberculous disease was not confined to the spleen and glands at the time the spleen was removed, so that procedure was futile in arresting the disease.

31. **Subdivisions of Duodenum.**—The authors propose to divide the duodenum into two parts cephalad and caudad to the bile papilla. These parts are conveniently called suprapapillary and infrapapillary. This is not only developmentally correct, but stands the test of pathology. An examination of certain statistics of duodenal ulcers shows that they are very common in the acid suprapapillary region; that their incidence decreases as the papilla is neared, and that they are extremely rare in the alkaline infrapapillary region. The normal physiologic differences of these parts above and below the papilla is thus emphasized by pathology. Statistics allege that duodenal carcinoma is commonest in the second part. This is fallacious and is due to the inclusion of Vaterian cancers in the total of duodenal neosplasms. When these have been subtracted carcinoma seems to be commoner in the suprapapillary region than in the infrapapillary part, possibly because of the greater incidence of chronic ulceration in the former.

Boston Medical and Surgical Journal

March 9, CLXXIV, No. 10, pp. 337-370

38 Field Work of State Department of Health on Communicable Diseases. W. W. Walcott, Natick.
39 *End-Results in Seventy Consecutive Cases of Umbilical Hernia Operated on at Massachusetts General Hospital. C. C. Simmons, Boston.
40 Some Electrocardiographic Studies of Patients Under Digitalis Treatment. H. W. Stevens, Boston.
41 Abnormal Parent. A. H. Ruggles, Providence, R. I.
42 Case of Traumatic Femoral Arteriovenous Aneurysm. E. A. Supple, Boston.

39. **Cases of Umbilical Hernia Operated on at Massachusetts Hospital.**—For purposes of analysis the cases have been divided by Simmons into three groups. Group 1. Small congenital umbilical hernia in children, and small hernia in adults which were operated on incidentally in the course of another operation, but for which the patient did not seek medical advice. There were fifteen cases in this group. Four patients could not be traced, and one died of intercurrent disease. Of the remaining ten cases, three adults and seven children, all are well and without recurrence. Group 2. The typical cases of large umbilical hernia of slow growth in stout, middle-aged adults, usually women, forty-three cases. Two patients died following operation. One of these died of shock. The hernia was small, but a difficult hysterectomy was done at the same time, and was obviously the cause of death. The other died suddenly on the table. Necropsy failed to show the cause of death. Mortality one in forty-two or 2.4 per cent. In ten the hernia recurred (22.2 per cent.), a very large percentage of recurrence. In thirty cases in which the Mayo operation was performed, there were three recurrences, or 10 per cent., while in the fourteen cases in which the ring was closed vertically, with or without overlapping of the aponeurosis, six recurred, or 42.8 per cent. The only case closed transversely, without overlapping, recurred. Group 3. Strangulated hernia, twelve cases. In nine of the twelve cases an attempt was made to cure the hernia. Two of these patients died following the operation: one of pneumonia, a man of 76, and one of probable pulmonary embolism, and one has since died of cirrhosis of the liver. In the remaining three cases enterostomy was done, and a loop of gangrenous intestine resected. One of these died of peritonitis, but in the other two the fecal fistula was successfully closed at a secondary operation. In one of these the hernia was cured, while in the other it recurred.

Journal of Immunology, Baltimore

February, I, No. 1, pp. 1-128

43 *Studies in Anaphylaxis. Relation Between Precipitin and Sensitizin. R. Weil, New York.
44 *Id. Equilibrium in Precipitation Reactions. Equilibrium in Combination. R. Weil, New York.

45 Id. Equilibrium in Precipitation Reactions. Dissociation. R. Weil, New York.
46 Id. Coexistence of Antigen and Antibody in Body. R. Weil, New York.
47 *Complement Fixation in Varicella. J. A. Kolmer, Philadelphia.
48 *Complement Fixation in Vaccinia and Variola. J. A. Kolmer, Philadelphia.
49 Fate of Various Antibodies in Precipitin Reaction. F. P. Gay and R. L. Stone, San Francisco.
50 Kidney Lesions in Chronic Anaphylaxis. T. H. Boughton, Chicago.
51 Site and Rate of Destruction of Pneumococci Following Intraperitoneal Injection. F. Berry and C. O. Melick, Chicago.

43. **Relation Between Precipitin and Sensitizin.**—The word "sensitizin" is proposed by Weil to replace the term "anaphylactic antibody." The precipitating substance of immune serum is competent to sensitize guinea-pigs passively. In other words, precipitin is also sensitizin. Antibody may be deprived of its precipitating function by heat without suffering a very material diminution in its sensitizing value. This observation corresponds with the previously known fact that "precipitoid," or heated precipitin, has retained its combining power with antigen, although it has lost its precipitating power. The precipitating, or ergophore group, is said to be thermolabile; the sensitizing, or haptophore group, to be thermostabile. Only the combining (or haptophore) group is essential to passive sensitization. Anaphylaxis therefore consists simply in the cellular reaction due to the fixation of antigen by cellular antibody. These new data therefore confirm and establish the theory of anaphylaxis supported in previous studies. The presence of antibodies may be demonstrated by means of passive sensitization in spite of the fact that the test tube reactions, such as agglutination and precipitation, prove ineffective. In infectious disease the coexistence of the antigen (the infectious agent or its product) in the blood might be expected to produce this result.

44. **Equilibrium in Precipitation Reactions.**—Weil claims that antigen and precipitating antibody do not coexist in the same fluid without undergoing union and precipitation. The theory that they do so coexist is fallacious, and is based on the use of a mixed antigenic substance, such as horse serum, which actually contains numerous separate antigenic substances. Similarly, the observation that two similar antiserums may give a precipitate when mixed, is due to the fallacy involved in the use of a mixed antigen.

47. **Complement Fixation in Varicella.**—The results of complement fixation reactions with serum from varicella patients obtained by Kolmer may be summarized as follows: 1. Of twenty-eight serums from patients who presented the first evidences of varicella in from four to forty-two days prior to the tests, eleven or 39 per cent. reacted weakly positive with a salt solution antigen of varicella crusts. 2. Of 24 serums tested with a salt solution antigen of the contents of varicella vesicles, seven, about 30 per cent. reacted weakly positive. 3. Negative reactions with both varicella antigens were generally observed with the serums of adult persons who had varicella in childhood. In varicella the Wassermann reaction is negative in the absence of syphilis. The serums of several syphilitics yielding strongly positive Wassermann reactions reacted negatively with the varicella antigens. 5. In all instances the degree of complement absorption with the serum of varicella patients and varicella antigens was slight (reactions weakly or doubtfully positive). 6. Cowpox and variola antibodies did not absorb complement with varicella antigens. 7. While these experiments have shown that an antibody in the nature of an amboceptor is present in the serum of persons suffering with varicella which will absorb complement in the presence of an antigen prepared of the cutaneous lesions of this disease, yet the percentage of positive reactions and particularly the degree of complement absorption is small; while immunity principles are in all probability present in the body fluids of persons for years after an attack of varicella these could not be detected by the complement fixation tests in Kolmer's study; all positive reactions were observed during or soon after an attack of the disease and at the time of probable highest concentration of antibodies. Kolmer suggests that a more delicate technic would probably yield a higher percentage of positive reactions as is usual in all complement fixation tests with bacterial antigens, but in this study this was avoided in order to guard against the possibility of nonspecific absorption of complement.

48. **Complement Fixation in Vaccinia and Variola.**—Of thirteen persons vaccinated with cowpox virus from seven days to ten years previously, and whose serum yielded negative Wassermann reactions, positive reactions with salt solution antigens of cowpox virus were observed by Kolmer with 4 or 22 per cent. The serum of one of these four persons yielding positive reactions (vaccinated eight, twenty-one, twenty-one and twenty-four days previously) with cowpox virus, reacted positively with a salt solution antigen of variolous material. The serums of unvaccinated persons reacted negatively with all antigens. Of seventeen persons suffering with mild smallpox, the serum of nine or about 60 per cent. yielded positive complement fixation reactions with salt solution antigens of variolous and cowpox viruses. While the degree of complement absorption was relatively weak in all instances the reactions were generally stronger with the variolous antigens than with the cowpox antigens. Alcoholic extracts of variolous and cowpox viruses possessed little or no antigenic sensitiveness.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

February, VIII, No. 2, pp. 89-135

52 *Vasoconstrictive Action of Serum on Coronary Vessels of Mammalian Heart. H. Yanagawa, London.
53 *Quinin and Atophan in Inflammation of Frog's Mesentery. Y. Ikeda, London.

52. **Vasoconstrictive Action of Serum.**—Of the colloids examined by Yanagawa only serum and egg white proved to possess the characteristic vasoconstrictor action on the coronary vessels, with the accompanying changes in the heart beat, while soluble starch, dextrin, glutin, arabin, agar-agar and pepton, either had no effect or in some cases dilated the coronary vessels.

53. **Quinin and Atophan in Frog's Mesentery.**—From Ikeda's experiments it appears that there exists a synergistic action between quinin and atophan in inhibiting the migration of leukocytes in inflammation of the frog's mesentery.

Journal-Lancet, Minneapolis

March 1, XXXVI, No. 5, pp. 127-154

54 Syphilis. (To be continued.) N. L. Linneman and E. L. Tuohy, Duluth.
55 Surgical Shock. R. D. Campbell, Grand Forks, N. D.
56 Surgery of Thyroid. V. B. Knott, Sioux City, Ia.

Journal of Abnormal Psychology, Boston

February-March, X, No. 6, pp. 369-438

57 Scientific Method in Interpretation of Dreams. L. H. Horton.
58 Case of Possession. D. Fraser, Glasgow.
59 Sex Worship and Symbolism of Primitive Races. S. Brown, II, Boston.

Medical Record, New York

March 4, LXXXIX, No. 10, pp. 399-454

60 Intestinal Stasis From Standpoint of Internist. E. L. Eggleston, Battle Creek, Mich.
61 Therapeutic Suggestions Derived From Newer Psychologic Studies on Nature of Essential Epilepsy. L. P. Clark, New York.
62 Use and Abuse of Rice Diet. L. D. Bulkley, New York.
63 Radium. D. C. Morrison, Saratoga Springs.
64 Rubber Gloves. R. T. Morris, New York.
65 Broader View of Tabes Dorsalis. F. R. Starkey, Philadelphia.
66 *Sign in Fracture of Pelvis. G. P. Coopernail, Bedford.
67 Laryngeal Tuberculosis. M. F. Lent, Lake Kushaqua.
68 Simple Tonsil Operation Under Local Anesthesia. H. Hays, New York.
69 Correction of Depressed Nasal Deformity by Transplantation of Conjoined Bone and Cartilage. W. W. Carter, New York.
70 Two Laboratory Suggestions. G. B. Lake, U. S. Army.

66. **Sign in Fracture of Pelvis.**—In practically all cases of fracture of the pelvis, Coopernail says, there will appear in from one to three days a more or less extensive ecchymosis of the perineum and scrotum in men, perineum and labia in women. In cases of not very extensive fractures of the crest of the ilium this sign may not be present. In fractures of the pubic portion of the pelvic ring (which is the most common fracture), invariably one will find ecchymosis of perineum and scrotum inside of three days. Coopernail has not been able to find this sign mentioned in medical literature.

Military Surgeon, Washington, D. C.

March, XXXVIII, No. 3, pp. 245-376

71 European Prison Camps. B. W. Caldwell.
72 Possible Reasons for Lack of Protection After Antityphoid Vaccination. H. J. Nichols, U. S. Army.
73 Prevalence of Bubonic Plague and Its Control. R. H. Creel, U. S. Public Health Service.
74 Preparations of Naval Medical Department of Battle. A. Farenholt, U. S. Navy.
75 Some Practical Points Regarding Results and Interpretations of Wassermann Test for Syphilis. C. F. Craig, U. S. Army.
76 New Manual for Medical Department. R. B. Miller, Washington, D. C.

New Jersey Medical Society Journal, Orange

March, XIII, No. 3, pp. 105-156

77 Future of Medical Profession. L. Emerson, Orange.
78 Tuberculin Therapy With Special Reference to Combination With, or Immediately Following Tuberculin Administration. E. Bonine, New York.
79 Heliotherany. H. J. Spaulding, Union.
80 Cesarean Section. E. Field, Red Bank.
81 Status of Roentgenologist. E. Reisman, Newark.
82 Fibroid Degeneration of Appendix. R. T. Morris, New York.
83 Diagnosis of Some of Itching Diseases of Skin. M. Shapiro, Bayonne.
84 Popular Education. E. A. Y. Schellenger, Camden.
85 Case of So-Called Bone Cyst of Trochanter. H. J. Bogardus, Jersey City.
86 Cases of Kidney Disease. S. R. Woodruff, Bayonne.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

February, XXII, No. 2, pp. 45-110

87 Physiologic Action of Spartein Sulphate. C. C. Haskell and H. B. Thomas, Richmond.
88 End Results of First One Hundred and Seventy-One Consecutive Abdominal Operations for Pelvic Disease in Women. G. P. LaRoque, Richmond.
89 Final Results of Abdominal Operations for Pelvic Disease in Women. Inflammation. G. P. LaRoque, Richmond.
90 Infiltrating Glioma of Left Temporal Lobe. F. Kennedy, New York.
91 Primary Myopathy (Muscular Dystrophy). A. H. Williamson, New York.
92 Double Hemiplegia in Old Case of Caisson Disease. R. G. Cannady, New York.
93 Chronic Intestinal Obstruction vs. Intestinal Stasis. F. W. Parham, New Orleans.

Ophthalmic Record, Chicago

March, XXV, No. 3, pp. 109-162

94 Cards for Sight Testing in Schools. E. Jackson, Denver.
95 Ethylhydrocuprein. H. F. Hansell, Philadelphia.
96 Radical Cataract Operation; Causes for Its Failure and How to Overcome Them. A. S. Green and L. D. Green, San Francisco.
97 Tension Suture for Advancement Operations. H. Gifford, Omaha.
98 Buried Knot Conjunctival Suture. R. O'Connor, Oakland, Calif.
99 Skin Grafting. Use of Petrolatum in Cutting and Open Air Treatment of Thiersch Grafts. W. R. Parker, Detroit.
100 Operation of Iridotasis for Glaucoma. D. Roy, Atlanta, Ga.
101 Simple Operation for Contracted Socket. F. H. Verhoeff, Boston.
102 New Stereoscopic Exercise Card for Stimulating Binocular Fusion. G. F. Suker, Chicago.
103 Case of Postdiphtheritic Paresis of External Rectus Cured by Antitoxin. A. Mason, Waycross, Ga.
104 Unusual Magnet Extraction. J. R. Smith, Chicago.
105 Lachrymal Sac Retractor. G. Campbell, Vancouver, B. C.

Providence Medical Journal

March, XVII, No. 2, pp. 61-124

106 Gynecologic Urology. H. D. Furniss, New York.
107 Fractures of Lower End of Radius. F. E. Peckham, Providence.
108 Spasmophilia. H. G. Calder, Providence.
109 Intracutaneous Diphtheria Toxin Reaction of Schick With Some of Its Applications. E. Fish, Providence.

Public Health Journal, Toronto

March, VII, No. 3, pp. 117-172

110 Rural Sanitation. A. C. Jost, Guysboro, N. S.
111 Prevention of Lobar Pneumonia; Can Anything Be Done? M. Nicoll, Jr., New York.
112 General Management of Lobar Pneumonia. D. Bovaird, New York.
113 Bacteriology and Present Status of Specific Treatment of Pneumonia. R. Cole, New York.
114 Medical Inspection of Rural Schools. S. A. Fulton, Truro, N. S.
115 Some Pressing Problems of Modern Times. T. Oliver.
116 Principle of Gary Plan and Its Application to New York. W. G. Wilcox, New York.
117 Method of Dealing With Tuberculosis in Public Schools of Toronto. F. S. Minns, Toronto.
118 Eugenics. C. L. Redfield.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

February, XIII, No. 146, pp. 33-64

1 Case of Congenital Word and Letter Blindness. T. R. Whipham.
2 Obesity; Epileptiform Attacks; Recurrent Jaundice in Girl Aged Thirteen Years. E. G. Fearnsides.
3 Cure of Squint. N. B. Harman.

British Journal of Surgery, London

January III, No. 11, pp. 349-584

4 Vascular Lesions Produced by Gunshot Injuries and Their Results; Report of Cases. G. H. Makins.
5 Gunshot Wounds of Shoulder. J. Bland-Sutton.
6 Treatment of Wounds in War. W. W. Cheyne.
7 Bradshaw Lecture on Wounds in War. A. Bowlby.
8 Treatment of Penetrating Wounds of Skull. P. Sargent and G. Holmes.
9 Traumatic and Arteriovenous Aneurysm. Aneurysmal Varix of Internal Jugular Vein and Internal Carotid Artery. J. Bland-Sutton.
10 *Study of Changes in Leukocytes in Certain Cases of Malignant Disease. O. C. Gruner.
11 Prevention of Deformity Following Fracture or Resection of Jaw. W. H. Dolamore.
12 Cases of Perforating Wounds of Rectum. H. J. Waring.
13 Abuses and Dangers of Drainage Tubes. G. G. Turner.
14 *Surgery of Enlarged Prostate. G. Simpson.
15 Four Cases of Persisting Infection of Brain Following Injury of Projectiles. C. H. Whiteford.
16 Case of Gunshot Perforation of Stomach and Diaphragm; Operation, Recovery. V. B. Green-Armytage.
17 Intussusception of Appendix. G. Johnson.
18 Case of Tamponade of Perforated Gastric Ulcer. E. M. Corner.
19 Case of Appendicitis and Diaphragmatic Pleurisy. E. M. Corner.
20 Case of Exophthalmic Goiter and Anoci-Association. E. M. Corner.
21 Retroperitoneal Hernia: An Addendum. A. R. Short.

10. **Leukocytes in Malignant Disease.**—Investigations on blood cells lead Gruner to formulate the following rules: If the smear shows neutrophilia, and fat drops in many of the neutrophils; if the nuclei of the neutrophils are largely multifid, the case is one of a coccal infection of great or very great severity. If the smear shows a relative abundance of lymphocytes (especially of the very small variety); if there is no leukocytosis; if multifid nuclei preponderate, the case is almost certainly not one of malignant disease. If there is neutrophilia, with bizarre forms, or pseudopods in number; if the lymphocytes are in many instances showing ameboid outlines; if the monocytes show ameboid nuclei the case is almost certainly one of malignant disease.

14. **Surgery of Enlarged Prostate.**—Simpson pleads for early operation in cases of enlarged prostate. The early operation has a very low mortality rate, probably under 5 per cent., and possibly a good deal less; the inconvenience of lying in bed for two or three weeks is not more than most people would cheerfully consent to for an abdominal operation, such as gastro-enterostomy; if palliative treatment is adopted, no surgeon on earth can say that an operation will not be necessary later for retention, cystitis, or hematuria and it is fairly certain that the mortality is then distinctly higher.

British Medical Journal, London

February 19, I, No. 2877, pp. 261-296

22 Gunshot Wounds of Head. H. M. W. Gray.
23 Treatment of Maxillary Fractures. V. H. Kazanjian.
24 Dental Cases Among Soldiers. S. A. Hopkins.
25 Deformities of Jaws Resulting from Operation or Injury. P. P. Cole and C. H. Bubb.
26 *Ulcers, New and Old; Jejunal for Duodenal Ulcers. J. Bland-Sutton.
27 *Antenatal Clinics and Prematernity Practice at Edinburgh Royal Maternity Hospital, 1909 to 1915. J. W. Ballantyne.

26. See LANCET, February 19, abstract 28.

27. **Prematernity Practice at Edinburgh.**—A prematernity department in Ballantyne's opinion is an essential part of a properly equipped maternity hospital, and it ought to consist of a pregnancy ward, and antenatal clinics, and of prenatal nurses (in the extern work). The diseases which will be

specially benefited by prematernity treatment will probably be albuminuria, eclampsia before the supervention of labor, hyperemesis, chorea, acidosis, threatened abortion, heart complications, anemia, chlorosis, hydramnios, phlebitis, pyelitis, and the antepartum hemorrhages before the onset of labor; but the ward will also offer advantages to patients waiting for the induction of premature labor on account of pelvic contraction or previous dead births from any cause. Less common indications for admission will be found in melancholia, alcoholism, jaundice, gastric ulcer, myxedema, mucous colitis, phthisis, recurrent abortion or fetal death, hematuria, injuries, etc.; well-equipped laboratory, in which the finer methods of clinical investigation can be carried out, as well as by the securing of the services of a pathologist skilled in the special morbid anatomy of the fetus, embryo, placenta, membranes and liquor amnii.

Lancet, London

February 19, I, No. 4825, pp. 387-440

28 *Ulcers, New and Old; Jejunal for Duodenal Ulcers. J. Bland-Sutton.
29 Trench Nephritis. W. L. Brown.
30 Use of Condensers in Diagnosis, Prognosis and Treatment of Nerve Lesions. F. Hernaman-Johnson.
31 *Some New Forms of Occupational Dermatoses. R. P. White.
32 Some Experiments with Simpson Arc Lamp. J. H. Sequeira.
33 Method of Providing Baths for Soldier in Field. H. N. Goode.

28. **Jejunal for Duodenal Ulcers.**—Bland-Sutton has excised the pylorus for chronic duodenal ulcer in twenty patients. In three of them he had previously performed gastrojejunostomy. In one the symptoms returned three months after the gastrojejunostomy, in another six years, and in a third two years. One patient, the sixteenth in the series, died. He was a man aged 38, with typical symptoms of chronic duodenal ulcer. At the operation an ulcer was found close to the pylorus on the anterior wall of a well marked bulbus duodeni. Bland-Sutton departed from his usual method and sewed the cut edges of the mucous membrane with catgut. The man made good progress until the fifth day, when his temperature rose to 103 F.; he died on the nineteenth day after the operation. The suture line had sloughed in two spots. Bland-Sutton attributes this unfavorable result to the use of catgut. Since the treatment of duodenal ulcer passed into the province of surgery it has become the routine practice to perform gastrojejunostomy for its relief in the hope that by diverting the chyme through the new stoma into the jejunum the ulcer will heal. If, Bland-Sutton says, the pylorus is obstructed by the ulcer the results are usually good, because the chyme must pass through the new stoma; but when the pylorus is patent the chyme flows through it and in some instances ignores the new route. Bland-Sutton believes it is better whenever practicable to excise the pylorus with the ulcerated portion of the duodenum and rejoin the stomach and duodenum on the principle of an end-to-end anastomosis. If this method could be made safe gastrojejunostomy for the relief of chronic duodenal ulcer with an unobstructed pylorus would soon be abandoned. Experience proved that the posterior gastrojejunostomy with an obstructed pylorus is a beneficent operation, in spite of the risk the patient runs of getting a new ulcer for an old one. The new ulcer has been evolved in this generation by alterations in the environment of the jejunum brought about by surgery.

31. **New Forms of Occupational Dermatoses.**—White reports cases of trinitrotoluene dermatitis and nitrate of ammonia dermatitis. In the treatment of these dermatoconioses the first application is a paint. White dabs it freely on the inflamed and itching parts. He says that it must not be used on irritable mucous surface. In the early pruriginous stage of these special forms of dust dermatitis it is of the greatest value, and its repetition is requested by the invalid.

	gm. or c.c.	
℞ Camphor	8	ʒ ii
Acidi carbolici	6	ʒ iss
Hydrarg. perchlor.	1	gr. xv
Picric acid	2	ʒ ss
Sp. vini rect.	180	ʒ vi

M. Fiat. pingt.
Sig.: Apply by a swab or brush.

For home treatment White prescribes 2 ounces of the paint mixed with 4 ounces of lotio calamin. compound and the addition of ½ dram of pulvis acaciae.

Annales de Gynécologie et d'Obstétrique, Paris

January-February, XII, No. 1, pp. 1-64

34 After the Laparotomy. E. Forgue.
35 Welfare Work for Parturients. (Note sur l'application de la loi sur l'assistance aux femmes en couches.) G. Lepage.
36 Experimental Research on the Mechanism of Menstruation. H. Vignes.

Le Nourrisson, Paris

January, IV, No. 1, pp. 1-64

37 *Diagnosis of Tuberculosis in Infants. Combe.
38 Vitality of the Pathogenic Microbes of Milk. (Transmission des maladies infectieuses par le lait.) A. B. Marían.

37. **Diagnosis of Tuberculosis in Infants.**—Combe comments on the aid afforded in the diagnosis of tuberculosis in infants by roentgenoscopy and the skin tuberculin test. A history of tuberculosis in the family is suggestive, and also the "vasodilatation face" as he calls the combination of slight cyanosis with a smiling and communicative air, advanced for the age, nervous restlessness and lack of sound sleep at night. The hair is long, shiny and silky, the eyes deep and luminous, with fine eyelashes and eyebrows, overred lips, bluish nails, the skin hairy and often moist. This aspect should suggest tuberculosis at a glance, but it is of only rare occurrence. More often the aspect is entirely normal, so that the positive tuberculin skin reaction is an overwhelming surprise and neither the weight nor state of nourishment show anything wrong; but roentgenoscopy confirms the tuberculin test. On the other hand, infants with chronic bronchopneumonia or those defectively developed may present such an aspect of debility that tuberculosis seems certain, when nothing later confirms this assumption. In 8.7 per cent. of the cases of tuberculosis in infants it localizes in the bones, and hence lesions should be sought in the skull, the phalanges and in the joints, although the latter localization is rare in infants. Skin tuberculids may be discovered on the trunk, shoulders or limbs, usually pinhead papules, pink, bluish and brownish in turn, with a brownish scale in the center which leaves a depression as it drops off. They grow shiny if the skin is stretched, but they never display any tendency to ulcerate. Or there may be chronic tuberculous ulcerations in the skin, or suppuration in the ear. These signs are more common in children from 2 to 6, but some may occur exceptionally in infants.

Roentgenoscopy alone, he affirms, is liable to mislead; its findings must be interpreted or corrected by clinical examination and other tests. As infants do not expectorate, there is no sputum to examine and as the infant organism is a virgin soil, there are no antibodies in the blood. Combe regards Mantoux' intradermal tuberculin reaction as more exact and much more sensitive and more reliable than the Pirquet skin test. Exactly one tenth of a milligram is injected into a fold taken up in the skin, and the diameter of the papule which develops is measured at the end of forty-eight hours. He says that during the last six years every child entering his service is "pirqueted" on one arm and "mantouxed" on the other, and he has thus been able to compare the reaction to these technics on thousands of children. Five infants presented the "vasodilatation facies" described above, with enlargement of the liver and spleen but not of the glands in the neck or mesentery. The mantoux test was positive and the tracheobronchial glands cast an abnormal shadow. These infants were below the average height and weight and the mothers were all tuberculous. The infants may have inherited antibodies which reduced the virulence of the tubercle bacilli but they were defenseless against other germs, and four died in a mild epidemic of influenza and the fifth from an unknown cause.

A positive mantoux test thus does not differentiate between latent or progressive or healed tuberculosis. A negative mantoux test testifies to the absence of the tubercle bacillus, provided that the organism of the nursling is able to generate antibodies or has had time to do so. The mantoux should

be repeated monthly, for three months, before a negative response is accepted as conclusive. In miliary tuberculosis the antibodies are absorbed by the tuberculin generated in the tuberculous lesions, and the mantoux may become negative. This is liable to occur also with intercurrent infections. Inspiration tracheal stertor indicates compression from swollen glands, as also what is known as the bitonal cough, the cough sounding as if it comes from two larynxes, owing to the lack of symmetrical functioning of the vocal cords, the sound emitted by each thus differing in pitch, etc. The temperature is scarcely ever instructive. The most important sign of tuberculosis in the nursling is the expiratory stertor, suggesting asthma. This is an almost certain sign and occurs early, and is not encountered in other affections, as a rule, in infants. Inspiration is silent, while expiration is noisy and prolonged, but the infant does not seem to notice it and keeps gay and smiling, unless the disturbance is severe and asthmatiform. As the infant trachea is so flexible, it yields readily to the encroaching glands and thus this sign develops early. Typical examples of all these types are reported in detail.

Lyon Médical, Lyons

January, CXXV, No. 1, pp. 1-32

39 Chemical Factors in Shell Wounds. (Eclats d'obus et gangrène gazeuse.) V. Hau.
40 Wounds of the Abdomen and Skull. (Blessures du crâne et de l'abdomen.) V. Hau.
41 Gunshot and Shell Wounds of the Chest. (Le syndrome hémo-pleuro-pneumonique; 53 observations personnelles.) Piéry. To be continued.

February, No. 2, pp. 33-64

42 *Prognosis of Deafness Acquired in War. (Le pronostic des surdités de guerre d'après 1,000 cas.) M. Lannois and F. Chavanne.

42. **The Prognosis of War Deafness.**—Lannois remarks that in times of peace the otologist often has to declare futile all his efforts to arrest encroaching deafness, but in war he is able to prophesy complete recovery of the hearing in many cases. Among 1,000 men in his ear and throat service near the firing line, there was more or less total deafness in 645 in which it dated from a concussion or commotion of the internal ear without direct traumatism. All but 2 per cent. recovered; these were left permanently deaf in both ears. In 189 other cases, purulent otitis media became aggravated by camp life, and the injury from a shell wound extinguished the last spark of hearing in many. Only 43 per cent. could be returned to active service; 56 per cent. to auxiliary service. Among 134 with sclerosis of the ear only 52 per cent. could be returned to active service. Neurotic deafmutism soon subsides under competent hands, but otherwise may persist for months. In two of the thirty-two cases of this kind there was a superposed organic lesion which entailed permanent deafness. The hearing was retained in only 5.2 per cent. of thirty-eight men wounded in the mastoid region; in all the others there was permanent total deafness.

Paris Médical

February 19, VI, No. 8, pp. 197-212

43 *Methods of Suturing Severed Nerves. (Sutures nerveuses.) J. A. Sicard.
44 Combined Apparatus for Compound Fracture of the Femur. (Un appareil commode d'extension et de soutien, combinaison de l'appareil à extension de Roux et de la gouttière à sangles de Blake pour le traitement de fractures compliquées de cuisse.) P. Cruet.
45 Sphincter Trouble in Paratyphoid. P. Merklen.
46 *Vaccination at Any Age. (La vaccination antivariolique est utile à tout âge.) M. Perrin.
47 *Magnesium Hypochlorite as a Disinfectant. C. Mayer.
48 Instrument for Extracting Projectiles From the Tissues. G. Sardou.
49 Interposed Short Tube of Soft Rubber Facilitates Intravenous Injections. (Technique pratique de l'injection intraveineuse. Importance du trajet intercutanéo-veineux; raccord en caoutchouc souple et mou.) G. Rosenthal.

43. **Suture of Severed Nerve.**—Sicard describes the various technics in vogue, saying that the results have not been as good as anticipated and reports of benefit have been conflicting. In his own service for treatment of wounded nerves he operates only when there is no sign of improvement in motor functioning by the end of the third month, and electric tests show the complete reaction of degeneration for all the muscles tributary below to the injured nerve, thus excluding hysteric and reflex motor disturbances. We know that a severed nerve soon sutured will regain its function in time. This occurred completely in a few months in a case in which the ulnar nerve had been cut with glass and was sutured ten hours later, and when a sciatic nerve had been cut by a scythe and was sutured in forty-eight hours. But these clean-cut wounds are very different from the wounds in war. The injured stumps have to be cut off above and below up into bleeding tissue, and the best method for bridging the gap is still a question. Sicard gives an illustrated description of a technic which he says is free from the objections of others cited. He cuts a long flap with square corners in the upper stump of the nerve, thus slitting the nerve lengthwise for this extent. A corresponding block of cellular tissue is cut from the adjoining tissue, left attached to the nerve flap throughout. This double flap is then turned over and sutured to bridge the gap, the cellular tissue being sutured to part of the lower stump of the nerve and to the adjacent cellular tissue. In this way the gap is bridged with true nerve tissue, while the flap used for the bridge is well nourished by its attached flap of cellular tissue, pedunculated above, and sutured to the cellular tissue below.

46. **Vaccination After Age of Thirty-Six.**—Perrin calls attention to the positive reaction in 64 per cent. of 29,076 men over 36 that were revaccinated in the last few months. The proportion of "takes" was highest, namely, 78.18 per cent., among the men over 43. Among 1,730 young soldiers the proportion was less than 45 and 35 per cent.

47. **Advantages of Magnesium Hypochlorite.**—Mayer says that magnesium hypochlorite is less caustic than sodium hypochlorite, while it is a powerful disinfectant and is very cheap. He prepares it by dissolving 190 gm. of magnesium sulphate in 2 liters of water and mixes this with 2 liters of water into which 100 gm. of chlorinated lime have been stirred. The precipitate of sulphate is then allowed to settle completely and the clear fluid is decanted ready for use. This fluid is tolerated perfectly by the tissues, he says, so it can be used freely. The organism bears magnesium well, quite different from free sodium or lime.

Presse Médicale, Paris

August 12, 1915, XXIII, No. 37, pp. 297-304

50 Present Status of Serum Treatment of Hemorrhage. (Le traitement des hémorragies par les sérums sanguins.) P. E. Weil.
51 Importance of Suprapubic Drainage of the Pelvis After Typhoid Perforation; No Attempt to Suture; Ten Cases; Recovery in Three. Iselin.

February 10, XXIV, No. 8, pp. 57-64

52 *Triple Vaccination Against Typhoid and Paratyphoid. (Revaccination antityphoidique et vaccination antiparatyphoidique.) F. Widal and J. Courmont.
53 Malignant Measles. (Traitement de la rougeole maligne par les injections intraveineuses d'or colloidal.) L.-A. Longin and V. Camuset.
54 *Wounds of the Skull. (Le traitement d'urgence des plaies pénétrantes du crâne par projectiles de guerre.) E. Velter.

February 14, No. 9, pp. 65-72

55 Improvised Apparatus for Continuous and Simultaneous Aspiration of Pus and Instillation of Fluid. (Pyoaspiration et instillation continues et simultanées des plaies de guerre.) R. Leroux.
56 *Eczema from Abuse of Disinfectants. R. Sabouraud.
57 *Aviation Sickness. (Etude expérimentale de la tension artérielle en vol.) G. Ferry.
58 Localization of Foreign Bodies. (Appareil simple pour localiser les corps étrangers.) F.-M. Cadenat.

February 17, No. 10, pp. 73-80

59 *Intermittent Insomnia as Manifestation of a Cyclic Psychosis. (L'insomnie à crises intermittentes manifestation de la psychose périodique.) G. Ballet.
60 Sensory Symptoms After Severing of Nerves. (Les symptomes sensitifs dans les sections anatomiques et physiologiques des nerfs périphériques.) Belenky.

52. **Vaccination Against Typhoid and Paratyphoid.**—Widal and Courmont comment on the frequency of paratyphoid among the troops as the most prominent epidemiologic fact of the war. Before the end of 1914 Landouzy urged that vaccination against paratyphoid as well as against typhoid be made compulsory. Experiments in this line were soon

commenced, and 4,000 men who had been vaccinated against typhoid were revaccinated with a triple vaccine. It contains the usual dose of antityphoid vaccine plus twice this dose of both paratyphoid A and B bacilli. It is made by the Salimbeni technic which does not require addition of a disinfectant. The reaction to this vaccination is not severe, merely the same as to an ordinary antityphoid vaccination. It was a question whether it would do to inject this triple vaccine in men who had already been vaccinated against typhoid, but experience has shown that the antityphoid element in the vaccine merely reenforces the previous vaccination, and does no harm in any way. They inject the triple vaccine in four doses: 1, 1.5, 2 and 3 c.c., each c.c. containing 1.5 million germs. Or the series can be crowded into three injections, 1.25, 2 and 2.5 c.c.. Under the influence of this vaccine, specific antibodies for each of the three bacilli appear in the blood. The agglutinating power sometimes ran up to 1:5,000 or even 1:10,000 for one or the other of the bacilli after the second injection.

54. **Wounds of the Skull.**—Velter is in charge of the special service, a few miles back of the firing line, for skull wounds. The wounded are brought direct by automobile and reach him in from two to six hours after the injury. He summarizes his year's experience in the advice to trephine always in every case of gunshot or shell wounds of the skull, regardless of whether the skull has been pierced or not. The trephining should be done at the earliest possible moment, and the exposure should be ample to leave nothing unexplored. It is not necessary to seek out all the intracerebral projectiles, especially small scraps, as they are often well tolerated. The wound should be closed, draining as little as possible. The earlier the operation, the less fear of infection and hence less necessity for draining. He reiterates that for wounds of the skull, perhaps more than any other wounds, the promptness of the operation is the essential factor for a favorable outcome.

56. **Artificial Eczemas.**—Sabouraud refers to the eczema which may develop around a wound from too prolonged or heedless use of iodin or hydrogen dioxid. He declares that the more efforts are made to heal up the eczema, the more inveterate it grows; all that the skin wants is to be let alone and it will heal. But if the eczema is maintained by injudicious use of local measures, a serious infectious process is liable to be set up. A dressing impregnated with a mixture of 4 gm. zinc sulphate and 1 gm. copper sulphate in 1 liter of distilled and boiled water, will keep a wound in good condition and hasten its healing.

57. **"Mal d'Aviateur."**—Ferry has been taking scientific measurements and records during a series of aeroplane flights. The tabulated data show that the changes in altitude make great demands on the heart as it is forced to adapt itself to the varying atmospheric pressure. This soon fatigues the cardiovascular apparatus. The blood pressure grows lower, this decline being more marked the more rapid the ascent and the descent. The combination of a fatigued heart and abnormally low blood pressure readily explains the sensations of somnolency, weakness and dizziness experienced by certain aviators. These are far more liable to be the result of slight anemia of the brain than of changes in the semicircular canals, to which they are generally ascribed. This assumption of a transient anemia of the brain also throws light on certain aeroplane tragedies and explains why aviators are so often found asleep on the ground beside their plane. The practical conclusions of the research are that aviators should fly on a quiet level and avoid passing too rapidly from one altitude to another. Persons with a cardiovascular apparatus unable to stand these repeated stresses should be excluded from aviation work. Any organic heart trouble, no matter how insignificant, should peremptorily forbid the profession of aviation to the candidate, and any visceral affection or congenital taint should be well weighed in the balance before admitting to the aviation training school.

59. **Insomnia as a Cyclic Psychosis.**—Ballet excludes from consideration the insomnia of the aged and of arteriosclerosis and autointoxication, discussing in particular a type of intermittent insomnia characterized by a dread of being unable to sleep, an actual phobia with anguish. This is accompanied by a train of symptoms including a certain depression during the day, a depression of mood, not physical, reduced inclination for work, and a tendency to be worried and distressed. The insomnia of this type comes on abruptly, complete, without known organic cause, and persists practically complete as it began. The patients are liable to relate that they have had in the past periods of depression or of distress or ideas of suicide. Ballet argues that these attacks of insomnia may be regarded as the manifestation of a periodical psychosis. The insomnia may alternate with attacks of agitation or of depression, or it may be the sole manifestation of the psychosis. In treatment he warns that laudanum is of little use in insomnia of this type; it is inclined to yield more readily to chloral, amylene hydrate or hypnotics of the veronal series. Baths up to the waist, at 28 C. for five minutes just before getting into bed, are often useful. He adds that we can attenuate the manifestations of a periodical psychosis and perhaps relieve the dread and insomnia, but no means are known for shortening it or postponing its recurrence.

Berliner klinische Wochenschrift

Nov. 1, 1915, LII, No. 44, pp. 1129-1152

61 The Perception of Itching. (Bewusstwerden des Juckens.) P. G. Unna.
62 Tasks and Problems of Internal Medicine in the War. Goldscheider. Concluded in No. 45.
63 Connection Between Climate and Tuberculosis. (Einiges über den Zusammenhang von Klima und Tuberkulose.) O. Schlesinger.
64 Cannula for Locating Foreign Bodies. (Zur Methodik der chirurgischen Entfernung lokalisierter Geschosse.) O. Weski.
65 Experiences With Infectious Diseases in the Troops. (Meine Kriegserfahrungen über Infektionskrankheiten.) Grundmann. Commenced in No. 42.
66 Fixation of Complement Test in Differentiation of Certain Infectious Diseases. (Versuche zur praktischen Verwertung der Amboceptorablenkung.) M. Tsurumi.
67 Disease in Fishes. (Die Krankheitserscheinungen bei den Fischen im allgemeinen.) P. Schiemenz.

Correspondenz-Blatt für Schweizer Aerzte, Basel

February 12, XLVI, No. 7, pp. 193-224

68 *Reimplantation of Genital Glands. (Ueber die Reimplantation der Keimdrüsen beim Menschen.) S. Stocker, Jr.
69 *Operative Treatment of Genuine Epilepsy. (Zwei Fälle glücklich operierter grosser Hirntumoren nebst Beiträgen zur Beurteilung organisch bedingter Epilepsie.) Theodor Kocher. Commenced in No. 6.

68. **Reimplantation of Genital Glands.**—After reviewing the various experiences in this line on record, Stocker reports two cases in which he reimplanted part of an ovary. One patient was a woman of 28 and panhysterectomy was done for a gonorrheal affection with extensive adhesions. One of the ovaries was cut out of the excised mass and sliced into disks only 2 or 3 mm. thick. An implanted disk of this kind grows into place very rapidly as blood vessels soon grow through it. The bed in which it is implanted must be rich in blood vessels and must protect the graft against injury from without. He implanted the graft in a fold in the peritoneum, and the wound healed by primary intention. Tested with epinephrin the fifth day, there was no specific response as must occur when the inhibiting influence of the ovaries has entirely dropped out. The woman never had any symptoms suggesting the artificial menopause, and was restored to health from her five years of semi-invalidism. Three years later an intestinal tumor required a laparotomy. The disk of ovarian tissue was found about the same size as when implanted, and it was very vascular. Stocker resisted the temptation to take a scrap for microscopic examination, fearing to compromise its vitality, as it had evidently been a successful graft. The second case was even more successful; the ovary and tube had been removed for ruptured tubal pregnancy first on one side and, two years later, on the other. At the second operation a disk of the ovary was reimplanted in the same way, and menstruation has continued regular since, and the woman's health has been constantly good. In a third case one testicle had been removed for a tuberculous process and a year later an operation was required on the other side for tuberculous epididymitis. A

slice of the sound part of the testicle was reimplanted in the cavity in the scrotum. The epinephrin test elicited a positive response the second day—this operation had been done under local anesthesia. Repetition of the test the seventh day was negative. Now, a year later, the implant feels as large as it did at first, and the sexual functions are apparently normal. In each of the cases all bleeding in the bed for the implant had been carefully arrested. In contrast to this successful testicle graft, he relates the history of a well-to-do young man both of whose testicles were removed at one time on account of tuberculosis. To save him the psychic shock, paraffin was injected on one side to make an artificial testicle, and he was not told that more than one had been removed at the operation. He developed melancholia and committed suicide finally. Possibly the loss of the entire testicle hormone may have been a factor in the melancholia.

69. **Epilepsy from Brain Tumor.**—In a case reported by Kocher, jacksonian epilepsy for four years was the only symptom from a large subcortical tumor in the left brain. The jacksonian then merged into "genuine" epilepsy, and six years later headache, vertigo and muscular weakness pointed to a tumor although there was still no choked disk. The operation, at the age of 43, revealed a psammoma as large as an egg which was successfully removed. In two other cases of a localized cortical focus, the resulting epilepsy was cured by the operation. All these cases and two others cited demonstrate anew the importance of increased pressure in bringing on epileptic seizures. In the case of a child with a brain tumor, lumbar puncture was being done and the pressure was seen to increase to 150. Then an epileptic attack developed and during the attack the pressure was seen to rise to 500 mm.

Deutsche medizinische Wochenschrift, Berlin

February 10, XLII, No. 6, pp. 153-180

70 *Treatment of Subperiosteal Hematomas in Rachitis. (Behandlung der Möller-Barlowschen Krankheit.) Peiper.

71 *Tests with Alien Substances of the Functional Capacity of the Kidneys. (Die Funktionsprüfung der Nieren mit körperfremden Substanzen unter bes. Berücksichtigung der Schlayerschen Methode.) G. Treupel.

72 Simpler and More Rapid Method for Cultivation of Typhoid Bacilli From the Blood. (Typhusbazillenzüchtung aus dem Blut.) H. Schürmann.

73 Treatment and Prognosis of Traumatic Aneurysms in War. (Zur Epikrise der Schussaneurysmen.) H. F. O. Haberland.

74 Dressings Medicated With Blood-Platelet Extract. (Ueber Koagulenverbandstoff.) A. Fonio (Bern).

75 Orthopedic Universal Apparatus. P. Schmidt.

76 *Advantages of Stiff Medicated Dressing. (Der Zinkleimverband.) W. Armknecht.

77 Improvised Oven and Heating Arrangement. (Ueber behelfsmässigen Ofenbau in einem Feldlazarett in Nordrussland.) Allhoff.

78 Organization of the Medical Inspection of Schools in Germany. (Die Schularztorganisation in Deutschland.) K. Süpfle. Commenced in No. 5.

70. **Moeller-Barlow's Disease.**—Peiper comments on the liability to blunder in the differentiation of the subperiosteal hematomas characteristic of this disease. He gives an illustration of one case in which the ten months' babe became pale, anemic, restless and irritable, the lower third of both femurs tender, and a hemorrhagic swelling was prominent around each of the five teeth, with hemorrhages in the conjuctivae and subperiosteal hematomas in the legs and also in the orbits causing extreme exophthalmos. If the true nature of the trouble is not recognized in time and the diet modified or it does not get casually modified, the child grows weaker and finally succumbs to a hemorrhagic bowel trouble or pneumonia. The mortality thus is high, but a change from the sterilized milk or other improper food to unboiled food transforms the clinical picture. Peiper reiterates that infantile scurvy attacks only bottle babies. Breast milk is urgently needed in advanced cases even if it can be taken only from the bottle. When only cow's milk is available, it should be obtained twice a day from the stable, kept on ice, and warmed just before feeding. The stools must be carefully watched, for young infants cannot long stand raw undigested milk. If the child cannot take care even of raw diluted milk, or if the milk is not reliable, it may be just brought to boiling and then taken off. As soon as the raw milk is tolerated, fresh fruit juices and fresh beef juice and by the fourth or fifth day or earlier a little vegetable, spinach, cauliflower, potato or asparagus tips may be distributed at the different feedings. He warns most emphatically against any attempt at operative measures for the extravasations. They retrogress under dietetic treatment; fractures and kinks in the bones heal when held between sandbags in the correct position. The children suffer so when they are moved that their clothing must be arranged to avoid moving. If the pain actually compels a sedative, he prefers 5 c.c. of a 2 per cent. solution of chloral three times a day in the milk. By the eighth or tenth day the child begins to move its apparently paralyzed legs, but complete recovery in the severer cases may require weeks or months. If breast milk is available, it should be kept up for several months, the raw milk until the symptoms subside. Peiper remarks that infantile scurvy was known before milk was ever sterilized, and that it is more common in the homes of the well-to-do. Bottle babies after the sixth month should always be getting some additional gruel or pap and by the ninth month a little vegetable, fruit juice and fruit.

71. **Tests of Kidney Functioning.**—Treupel concludes from his experience that the advantages are all on the side of using substances for functional tests which are normally constituents of the urine. The technic is a little more complicated with them, but the findings are more reliable than with the potassium iodid and lactose tests. But in puzzling cases it may be necessary to call on them all. After a standard diet for a time, have 1,600 c.c. water ingested; the normal eliminate this smoothly in twelve hours. The elimination of the test dose of 0.5 gm. potassium iodid, by the mouth, should be completed normally in fifty or sixty hours. The test dose of sodium chlorid is 10 gm. and it is recovered from the urine by Strauss' method. The test dose of lactose is 20 c.c. of a 10 per cent. solution, injected intravenously; normally it is eliminated at latest in six hours. The urine is examined for it with the polarimeter. This intravenous injection may be accompanied by chills and by fever. When the lactose takes longer than five or seven hours to be eliminated, the glomeruli are probably at fault; the tubuli, when the potassium iodid lingers for longer than sixty hours.

76. **Stiff Immobilizing Paste Dressing.**—Armknecht lauds the relief afforded by dressings made with Unna's paste of zinc oxid, ichthyol, glycerin, gelatin and water, in treatment of the milder injuries of the soft parts in war, varicose veins, etc. The bandage is wound from the toes to the knees after shaving the region.

Münchener medizinische Wochenschrift, Munich

Dec. 7, 1915, LXII, No. 49, pp. 1669-1708

79 Radiotherapy of Myoma. (Strahlenbehandlung der Myome in einer einmaligen Sitzung.) W. Friedrich and B. Krönig.

80 Mesothorium Treatment of Uterine Carcinoma; One Hundred Cases. K. Baisch.

81 Wounds of the Lungs and Pulmonary Tuberculosis. (Lungenschüsse und Lungentuberkulose.) H. Rieder.

82 *Carbon Dioxid Snow as Sensitizer in Radium Therapy. (Kohlensäureschnee als Sensibilisator in der Radium-Therapie.) E. Sommer (Zurich).

83 The Duodenal Sound as Means to Reveal Typhoid Bacilli in the Bile After Recovery From Typhoid. W. Stepp.

84 Emergency Wells. (Zur Verwendung des Abessynierbrunnens in Polen.) von Scheurlen.

85 Tannin in Alcohol as Emergency Substitute for Tincture of Iodin. H. Schmerz.

86 Plastic Operation to Make a Substitute for the Thumb. (Daumenersatz.) C. Hörhammer.

87 Improved Technic for Making Artificial Leg. (Methode zum Abnehmen von Druckgipsabgüssen und zum Baue der Prothese mit genauer Orientierung zur Achse der unteren Extremität.) J. Hanausek.

88 Jail Sentence for Two Months Up to a Year for Women Who Permit Sexual Intercourse Knowing That They Have Venereal Disease. (Strafbarkeit des Geschlechtsverkehrs bei venerischer Krankheit.) F. Schaefer.

89 Nerve Grafting. (Zur Nervenpropfung.) Enderlen and Knauer.

90 Pleurisy After War Wounds of the Chest. (Pleuritis nach Brustschüssen.) D. Gerhardt.

91 *Local Intraspinal Salvarsan Treatment of Meningeal Syphilis. Gennerich.

92 Tests for Adaptation of Vision. (Ein einfacher Apparat zur Messung der Adaptation.) K. Wessely.

93 Physiologic Removal of Splinters of Bone and Sequesters After War Wounds of Bones. R. Klapp.
94 Saving the Hand Wounded in War. (Die Erhaltung der Verwundeten Hand.) O. Witzel.
95 March Fracture. F. Eyles.
96 To Reduce Hemorrhage at Amputations. (Blutersparung bei Amputationen.) Heidenhain.
97 Means to Remove Splinters of Bone After Wounds of the Skull and Abscesses in the Brain. (Schonende Entfernung von Knochensplittern und Fremdkörpern bei Schädelschüssen und Hirnabszessen.) G. Perthes.

82. **Carbon Dioxid Snow as Sensitizer for Radium Rays.**—Sommer found that a cancroid on the nostril in one case and one at the junction of the nose and lip in another case seemed to display great resistance to radium therapy. Under the usual technic only very slow and insignificant progress was being realized. Then he applied a pencil of carbon dioxid snow under considerable pressure, kept up for forty-five hours. There was a strong reaction but the lesion was not entirely cured, and conditions were found the same after an interval of two months. Then the radium was applied anew by the former technic, and in three weeks not a trace of the cancroids was left, merely a scarcely perceptible pinkish scar in their place, and the cure has been permanent during the one and two years since. In a third case a rebellious hyperkeratosis under and around the thumb nail yielded at once to strong pressure from the dioxid snow pencil for forty-five seconds, followed by exposure to radium.

91. **Intraspinal Treatment of Syphilis.**—Gennerich refers to what he calls histologic meningeal recurrence of the manifestations of syphilis, cerebrospinal syphilis and incipient tabes and paresis, as the field for endolumbar treatment. With farther advanced tabes and paresis a trial is justified but without much hope. All affections of the spinal cord are particularly sensitive to intraspinous treatment. If salvarsan, for instance, is not distributed thin enough, injury may be inflicted equivalent to a transverse bisecting myelitis. The dosage is of the greatest importance, as we must keep the cord free from irritation. He is skeptical as to the permanent benefit from mere intravenous injections. His cases of tabes with normal cerebrospinal fluid and given a course of six intravenous injections of salvarsan yet all developed tabetic crises in a year or a year and a half. With entirely recent paresis good clinical results were sometimes obtained, and the fluid was brought to normal. Even with a number of intravenous courses he often found it impossible to bring the fluid to normal, even when as yet there were no clinical deficit symptoms. With intraspinal treatment, on the other hand, the fluid has kept constantly normal, with a single exception, and there have been no clinical manifestations even up to as late as two and a half years. He has gradually come to treat by the endolumbar technic all cases of histologic meningeal recurrence, and he has never witnessed the slightest disturbing by-effect. except in one case in which there was transient anesthesia of the legs. He adds that the results of intraspinal treatment are particularly brilliant with clinical cerebral syphilis. If it is a recent neurorecurrence, he generally begins with one or two small intravenous injections to avoid much of a febrile reaction. He reviews the experiences in the German navy, to which he is attached, saying that he has had no neurorecurrence for three and a half years, and in four years of surveillance of the cerebrospinal fluid and serologic control there have been only twelve cases of histologic meningeal recurrence soon after treatment, and only six cases with a year's interval. Gratifying results are recorded in 95 per cent. of the fresh cases of syphilis. He has never adopted the salvarsanized serum technic as he sees no advantage in it. Positive findings in the fluid are a warning to combine local treatment of the meninges with the general treatment. Not more than six or eight endolumbar injections are needed, as a rule, to restore clinically normal conditions in the fluid, but he continues with two more injections after this. By this technic the whole course of treatment of the syphilis is materially shortened and surprises averted. He says that when the histologic meningeal recurrence has retrogressed, the men can be sent back to active service without apprehension. Gennerich gives the minute details of the technic he follows, but no statistics.

Gazzetta degli Ospedali e delle Cliniche, Milan

February 10, XXXVII, No. 12, pp. 177-192

98 Insects, Flies and Dogs in Transmission of Leishmaniosis. (Come si propaga il bottone d'Oriente?) Pari.

Policlinico, Rome

February 13, XXIII, No. 7, pp. 197-228

99 *Thin Candidates for Life Insurance. (La magrezza e l'assicurazione-vita.) I. Romanelli.

99. **Thin Candidates for Life Insurance.**—Romanelli's study of this subject is based mainly on American works along this line. He is not decided himself in his views, saying that all the factors in each case should be taken into account, the age, the environment, especially living with tuberculous persons, the personal history, habits of life and occupation, ascertaining whether the person has grown thin comparatively recently or has always been lean. Only when all these are duly compared and weighed in the balance is it possible to estimate the risk. He cites a number of small tables showing, among other things, that inheritance of tuberculosis from the mother is more dangerous than from the father. Among 100 tuberculous patients Romanelli has examined at Rome, all with a history of pleurisy at some time, the interval since was one year in over 22 per cent.; two years in 13.9 per cent., and so on up to eighteen years in 3.5 per cent.; twenty years in 1.38 per cent., and over twenty years in 3.5 per cent.

Brazil-Medico, Rio de Janeiro

January 15, XXX, No. 3, pp. 17-24

100 Syphilitic Banti Syndrome. O. Clark. To be continued.
101 Hygiene in Alimentation. (Noções de hygiene alimentar.) G. Armbrust. To be continued.

January 22, No. 4, pp. 25-32

102 *Mycosis of the Lungs Produced by Brazilian Oidium. O. Magalhães.
103 *Cleaning Up of Yquitos. (Saneamento de Yquitos.) O. L. Romero.

102. **Pulmonary Mycosis.**—Magalhães now has a record of fourteen cases with six deaths and postmortem examination in five, in all of which he found what he thinks is a new mycosis in man, highly pathogenic. The lesions produced by this Brazilian oidium resemble those of tuberculosis so closely that there is little doubt it has often been mistaken for the latter, especially as it seems to be widespread throughout Brazil. Study of a number of hospital records of cases of supposed pulmonary tuberculosis but with persistently negative bacteriologic and serologic findings for both tuberculosis and syphilis may belong in this category. It is further possible that cases of pulmonary lesions subsiding under treatment for syphilis may have been in reality this mycosis, cured by the potassium iodid given for the supposed syphilis. He reviews the literature on other forms of pulmonary mycosis, and discusses the differentiation from them and from malignant and echinococcus disease, etc. The lesions with the Brazilian oidium ranged from a small patch in the apex or in a tracheobronchial gland to extensive cavities in the apex on both sides, involving large areas below. The recovery in some of the cases seemed like a resurrection; if the destruction had been the work of tubercle bacilli the patient's doom would have been sealed. The oidium mycosis continued its progressive course unmodified by the whole therapeutic arsenal until potassium iodid was systematically given, when at once it began to retrogress. Even sodium iodid is effectual. After testing the susceptibility and the state of the kidneys, he gave from 2 to 8 gm. a day. For intravenous injection he preferred isotonic sodium iodid. The improvement is soon striking; the general health improves in all directions and the parasitic hemoptysis returns no more. The pulmonary lesions retrogress entirely, leaving merely a little roughness in breathing and subdulness on percussion. There was recurrence later in one case, showing that the treatment should have been kept up a little longer. The individual tolerance for the iodids varies within wide limits, and this has to be taken into account in the dosage.

103. **The Cleaning Up of Yquitos.**—Romero relates that the three large cities in the Amazon region have now been cleared of yellow fever. The Brazilian authorities cleaned up Para and Manaos and the task has been completed for the third city, Yquitos, in Peru, which had neither sewerage,

street pavements nor water fit to drink, while the inhabitants are poor and careless of hygiene, and the remote central government apparently never gave a thought to Yquitos except to collect the taxes. Romero tells how the work was done by Dr. George Converse of the U. S. P. H. Service, and he says that it broke the record for eradicating yellow fever at the least expense. The city has 12,754 inhabitants and 18 kilometers of winding open ditches. When these are not flushed by rain they stagnate, while a heavy rain makes them overflow into the houses. The tropical heat and moisture and rank vegetation aid in breeding innumerable mosquitoes. There is no agriculture and no manufacturing there, and the food is all imported, mostly canned goods. In the 3,000 houses of the town there were 10,600 various barrels, tanks, etc., for water and only 300 modern apparatus; Romero adds that there were no privies, and only 733 latrines. The mortality in 1912 was 40.58 per thousand. These were the conditions when Converse took hold in 1913; ably sustained by the prefect, Colonel Puento, who was responsible for initiating the whole movement. Romero regards it as a particular triumph that fumigation of the houses was omitted as unessential. On the same scale of expense as at Panama and Havana, this cleaning up of Yquitos would have cost £1,867 a month but Converse accomplished it with only £323 a month, notwithstanding that the cheapest labor there is paid $3.30 a day and crude petroleum is very high. The mortality dropped at once to 28.88 and in 1914 to 21 per thousand. The army hospital record showed in 1912, 27.67 per cent. of the men in the hospital at some time. The next year, under Converse's régime, the hospital was quite empty. Converse studied every possible means to educate the public in hygiene and protection against disease and opened free dispensaries for hookworm. The Peruvian government is now taking steps to float bonds to cover the expense of installing sewers at Yquitos. Romero adds that Yquitos is an example of what can be accomplished when an energetic administration backs up the talent of a physician and utilizes the scanty means at hand. The Amazon region has now been transformed, he reiterates, into a perfectly salubrious center free from all further dread of yellow fever. (Romero's account of the cleaning up of Yquitos was presented at a recent meeting of a Rio medical society.)

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

January 22, I, No. 4, pp. 277-352

104 *Perthes' Juvenile Deforming Osteochondritis. H. M. Hijmans.
105 Factors Which Influence Intensity of Tendon Reflexes. (Over de intensiteitsverhoudingen bij den tensorreflex.) M. Ono.
106 Experimental Research on the Reversibility of Formation of Urea in the Liver. (Over de reversibiliteit der ureumvorming in de lever.) B. C. P. Jansen.
107 Case of Herpes of the Iris and Deep Dendritic Keratitis. W. P. C. Zeeman.

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108 The Present and Impending Status of Contract Practice in the Netherlands. (De geldelijke positie der ziekenfondsgeneesheeren im Nederland.) A. C. van Bruggen.
109 Study of Pulsus Alternans. (Hartalternans.) S. de Boer.
110 Infectious Erythema; Eight Cases. M. W. Schelema.
111 Differential Diagnosis of Variola. (Over het diagnosticeeren van pokken.) J. Kuiper.

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112 *The Asymmetrical Pelvis the Cause Not the Consequence of Scoliosis. (Het asymmetrische bekken en de skoliose.) J. H. O. Reijs.
113 *Acute Pancreatitis. S. B. de Groot.
114 Bone Sequesters Cast Off Through the Larynx From Otitis Process. (Een beentje in het strottenhoofd.) D. Muyderman.

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115 *Pyelocystitis in Children. (Over de aetiologie en de behandeling met geneesmiddelen van de pyelocystitis van kinderen.) G. J. Huet.
116 Technic for Vaccination Against Smallpox. (Eenige beschouwingen over de praktijk der koepokinenting.) E. J. Hamburger.
117 *Laryngeal Tuberculosis and Pregnancy. (De tuberculose van het strottenhoofd en zwangerschap.) C. M. Hartog.
118 Acutely Developing Cataract in Eye With Inflammatory Glaucoma. (Acuut opgetreden, en weer genezen cataract bij glaucoma inflammatorium.) W. Koster.

104. **Juvenile Deforming Osteochondritis.**—This is the name given by Perthes to this affection of the hip joint which causes the child to limp for a time. Then it seems to outgrow the tendency and no ankylosis is left. Several articles on the subject have been summarized in these columns, as on page 91 of THE JOURNAL of Jan. 2, 1915. Hijmans had occasion to watch the development of the affection in a little girl of 7 who had required bloodless reduction of congenital dislocation of the left hip joint at the age of 2. At 5 she began to limp with the right leg, but roentgenograms showed the head of the femur in its normal relation to the acetabulum. There was no pain, but as the child limped more and more, another roentgenogram was taken six months later and the head of the femur was found to be flattened out into a thin plate; the right trochanter was higher than the left, and the leg was 1.5 cm. shorter than its mate; but there was still no pain. The trouble was thus the benign so-called deforming osteochondritis which develops in children between 7 and 10. The chief danger with it is that it may be mistaken for a tuberculous process and given operative treatment. This it does not need. Hijmans reiterates that the trouble is some dystrophy of the head of the femur, and all it requires is to relieve the bone of strain for a time. The functioning of the joint is gradually restored and finally becomes quite normal. He kept his little patient in bed for six weeks, allowing her to sit up in bed. This kept the hip joint from weight-bearing while yet its functioning was maintained. After this the child was allowed to be up and about but not to take long walks or play running games or climb stairs, and she rides to school. Hijmans is unable to explain why the child began to limp before any changes in the head of the femur became apparent. In conclusion he urges that the affection should be known as osteodystrophy of the hip joint rather than osteochondritis, as all observers agree that there is no inflammation. The term he proposes, osteodystrophia coxae, expresses the true nature of the affection, namely, that the upper end of the femur has failed to develop properly, either primarily or in consequence of some extraneous circumstances.

112. **Asymmetrical Pelvis and Scoliosis.**—Reijs had his attention attracted to this subject by a peculiarly instructive case, and his further research showed asymmetry of the pelvis in a surprisingly large proportion of cases of scoliosis. He thinks that the deformity of the pelvis was congenital in most of the cases, and that this brought on the scoliosis. He suggests some mathematical formulae for measurement of the pelvis, and urges that some standard method for this be adopted and that more heed be paid to the pelvis with curvature of the spine.

113. **Acute Pancreatitis.**—De Groot remarks that one reason why a pancreatitis is so seldom diagnosed is because no one thinks of it, as the symptoms may be so misleading—"Did not Germany's greatest surgeon die of acute pancreatitis a few years ago without any one's suspecting the true nature of the trouble!" But a history of abdominal pain, symptoms suggesting irritation of the upper part of the peritoneum, but not much muscular rigidity, although a resisting patch can be felt in the depths across the epigastrium, and the bowels are not completely obstructed—this combination should suggest the possibility of acute pancreatitis. We have no means to distinguish between the cases that are going to run a mild or a grave course, and so long as we have no antidote to counteract the pancreas toxic necrosis, it is better to slit the capsule without delay. Unless gallstones are evident, he advises leaving the biliary apparatus alone. The retrospective history of a case he describes in detail shows that the woman of 29 had had several attacks of intermittent pain in the epigastrium, radiating to the right side and sometimes coming on with the menses. These were symptoms of acute pancreatitis, and the pancreatic juice had induced necrosis in the vicinity. The inflammation in the pancreas subsided and the necrotic tissues shriveled and dropped off, sliding down into the ileocecal region where they formed a puzzling tumor, suggesting appendicitis. The appendix region was found sound. There was a blood-stained exudation in the abdomen but no trace of blood on the pancreas. The causes of acute pancreatitis are reviewed in detail; it seems to require activation of the ferments inside the pancreas plus diminished resisting power on the part of the latter. This is particularly liable when gallstones, blocking the outlet, cause the pancreatic juice, mixed with bile, to back up into the pancreas,

or a contusion or infectious process may induce embolism. De Jong found gallstones in only one of five cases of acute pancreatitis, and De Vries in two of his five cases. A tendency to corpulence is noted in most of the instances of acute pancreatitis.

115. **Pyelocystitis in Children.**—Huet discusses in particular the medicinal treatment of pyelocystitis in young children, reviewing the literature of the last few years on the subject and tabulating the result of personal tests and experiences. He repeated Duker's tests of the effect of various drugs on different kinds of bacteria, experimenting with hexamethylenamin, potassium citrate, sodium citrate and others, alone or in combination. The results in the test tube did not correspond with the effect in the clinic. He witnessed clinical benefit from salol only in one case. This was a 10-months babe taken with alarming symptoms. No effect was apparent from a dose of hexamethylenamin, but slight improvement followed 4 gm. potassium citrate a day, but it proved transient. No better results were obtained with 0.1 gm. salol five times a day but when this dose was increased to 0.2 gm. five times a day the fever subsided in a remarkable manner. After salol had been given for five days in succession there was slight anasarca, but this subsided and permanent recovery followed one dose of 4 gm. potassium citrate fractioned. In two chronic cases the *Bacillus lacticus aerogenes* had been found in the urine for three and six months, but under two weeks of potassium citrate the urine was cleared from it. It is evident that the effect of the drugs varies with the dosage, the acidity of the urine, and still other factors which vary from case to case. It seems to be established now that bacteria from an inflamed intestine may pass into the blood. Czerny and Moser have found both the *B. lactis aerogenes* and the colon bacillus in the blood stream under such conditions, and there is reason to assume that they may pass readily into the urine. The evidence to date seems to be against the assumption of ascending infection of the kidney pelvis from the bladder. Huet has recently encountered a small epidemic of pyelitis, all in infants. The first had a fever persisting after recovery from bronchitis and the fever was finally traced to pyelitis, and a similar pyelitis then developed at one or two weeks' intervals in the four others. There was no direct contact between the infants, and no preceding bowel trouble in any, and the children were in three different apartments. The infection must have been carried to each by the nurse who tended to them all at night and gave them their first feeding in the morning. The question whether the infection occurred by way of the urethra, in changing the diapers, or by way of the mouth, in feeding them, seems to be answered by the fact that the urine of one infant was repeatedly examined after it was taken sick, and was found constantly sterile until the pyelitis had been under way for nearly six days, with vomiting, slight edema and fever. When leukocytes and bacteria were finally found in the urine, they were accompanied by a brief high fever. The course of the infection and of the pyelitis and also the bacteriologic findings confirmed the special infection in these cases, a paracolon bacillus being cultivated from the urine of each, with identical reactions in all to indol, maltose, milk, etc., gram negative in all, and none liquefying gelatin. Two of the cases were exceptionally severe. All the data sustain the assumption that in the majority of cases the kidney pelvis is infected from within. His conclusions from his research are to the effect that drugs to disinfect the pelvis are scarcely liable to reach the bacteria ensconced in the walls of the pelvis, which is the usual rule. But the drugs play an important part in counteracting the intoxication of the urine and the consequences therefrom, so that urine antiseptics are a necessity in every acute case. The efficacy of potassium citrate is probably due to its property of mobilizing calcium. This modifies and transforms the osmotic currents; lymph streams out, sweeping out bacteria with it and bringing them within the reach of our therapeutic measures. He quotes Wright's commendation of potassium citrate as a valuable lymphagog aid in opsonin therapy. This may explain, Huet adds, why it is of so little use in acute pyelitis—before the system has had opportunity to produce opsonins—while its action in more chronic pyelitis is so effectual. Its efficacy depends on its reenforcing of the natural curative processes.

117. **Pregnancy and Laryngeal Tuberculosis.**—This is a communication presented recently to the Netherlands Otolaryngologic Society. In it Hartog protests against the optimistic report on the relations between pregnancy and tuberculosis drawn up last year by a committee appointed by the national Netherlands Medical Society. (Some of the data were mentioned in these columns, 1914, lxii, 243.) Hartog's experience has been quite the reverse with laryngeal tuberculosis, and he here relates some typical cases, emphasizing that conditions differ materially whether the tuberculous lesion is in the throat or lung. The experience of laryngologists has shown that early interruption of the pregnancy will save the lives of many pregnant women with laryngeal tuberculosis.

Finska Läkaresällskapets Handlingar, Helsingfors

LVII, No. 7, pp. 793-934

119 The So-Called Chronic Neurodermatitis. (Prurigo diathésique—Besnier; lichen simplex chronicus—Vidal.) A. Cedercreutz.
120 Prophylaxis of Cholera in Finland. (Huru Finland hindrat kolerans inträngande i landet åren 1908, 1909 och 1910.) R. Sievers.
121 *Conversion of Face Into Vertex Presentation. (Till frågan om behandlingen af förlossningen vid s. k. deflexionslagen.) S. E. Wichmann.
122 Weight and Size of the Newly Born at Term in Finland. (Förberedande undersökningar af det s. k. fullgångana finska fostrets vikt- och dimensionsförhållanden.) O. Tudeer; (Till kännedomen om kroppsvikten hos nyfödda främst med hänsyn till forhållandena i Finland.) E. Runeberg. Discussed in Nos. 9, 10 and 12.
123 Salicylic Acid in Alcohol in Local Treatment of Acne and Variola. (Salicylsyresprit vid varicellae och variola.) P. Z. Collan.

No. 8, pp. 935-1048

124 Treatment of Fractured Lower Jaw. (Om protesbehandling af underkäksfrakturer.) H. Avellan.
125 *Operative Treatment of Prolapse of Genital Organs. E. A. Björkenheim.
126 Congenital Fistulas and Cysts in the Neck. (Om kongenitala halsfistlar och cystor.) K. V. Tiisala.
127 Definition of "Sound Part" From Standpoint of Industrial and Life Insurance. (Hvilken är innebörden af begreppet "frisk och färdig kroppsdel"?) E. Ehrnrooth.

No. 9, pp. 1049-1254

128 A. Paré and His Work, 1510-1590. (Dokument ur medicinens historica.) R. Tigerstedt.
129 Eight Successful Operations on Brain or Spinal Cord. (Till hjärn- och ryggmärgskirurgien.) A. Krogius.
130 *Aspiration Treatment of Pleural Empyema. (Till kännedomen om sugbehandling af pleuraempyem i anslutning till ett fall af pyopneumotorax.) Y. Meurman.
131 *Improved Instrument for Mechanical Dilatation of the Uterine Cervix. (Till frågan om det bästa sättet att mekaniskt utvidga cervix under partus. En ny dilatator.) S. E. Wichmann.

121. **Conversion of Brow or Face Presentation into Occiput Presentation.**—Wichmann describes a method with which he changed the presentation at the first trial. Two fingers of the left hand are introduced into the vagina as for the ordinary examination. With these fingers the fetal head is pushed up until it is freely movable and these fingers support and control it throughout. The stretched and stiff right hand is then applied as for an ordinary gynecologic examination. It is held to form a lever with the thumb on the occiput and the fingers on the chest. With this leverage action the occiput is worked down and the chest up while the fingers of the other hand work the head over until the posterior fontanel can be felt in the pelvic inlet. The occiput is then released and the lever carried to the breech. This is then pushed over toward the abdomen while the chest is still immobilized by the other arm of the lever. He adds that as the intervention is outside of the uterus, the danger of infection is reduced. The technic is simple, and owing to its resemblance to the ordinary bimanual gynecologic examination is easily mastered by any physician. During the manipulation the segment of the uterus over the occiput is not stretched any more; the tension is reduced. The manipulation proceeds slowly and gently, so that the danger of asphyxia is minimal. The procedure is no more exacting than external version, and he thinks it might be applied at the onset of delivery when needed, while the child is more freely movable. It can be done with the os closed or dilated, before or after rupture

of the membranes, and regardless of whether the head is already in the pelvic inlet or not. In his six cases the presentation was converted to the occiput presentation at the first trial, and without the least trouble.

125. **Operative Treatment of Genital Prolapse.**—Björkenheim reports the ultimate outcome in 205 of the 300 cases in which operative treatment was applied for genital prolapse at the Helsingfors clinic, with an interval since of from one to twelve years. The prolapse returned in 24.4 per cent. Relapse occurred in 46.9 per cent. of the 32 cases in which the Hegar or Lawson Tait vaginal plastic method was applied. There was relapse further in 26.3 per cent. of the 80 cases in which ventrofixation was done by the Czerny-Terrier method. In 15 cases the women passed through a pregnancy later without disturbance after ventrofixation plus colpoperineorrhaphy according to Hegar, but 6 of these women had the prolapse return later. The Schauta-Wertheim technic was applied in 10 cases with relapse in 11.1 per cent. The round ligaments were shortened in 4 cases and the result has been permanently good. Vaginal hysterectomy was done in 92 cases; the ultimate outcome is known in 68, with relapse in 13.2 per cent. He ascribes the failures to lack of adequate care in the vaginal plastic operations. With anterior colporrhaphy, for instance, the bladder should be entirely detached and the cystocele reduced by suturing in a fold of the bladder. With colpoperineorrhaphy, on the other hand, a high and firm raphe should be made, as well as a broad and strong rectovaginal septum, and the levator fascia should be sutured.

130. **Aspiration Treatment of Pyopneumothorax.**—Meurman writes from the field lazarett in Poland, donated by a group of manufacturers in Finland, to give an illustrated description of the vacuum bell which he uses on suppurating wounds in the chest. The metal bell or cap measures 9 by 13 cm. and is 4 cm. high, with a rubber cover on both sides. It fitted like a suction bell over the wound in the back in the case described.

131. **Wichmann's Dilator.**—The blades of this dilator move always parallel to the axis of the pelvic inlet. It permits the cervix to be fully stretched in ten minutes in emergencies, or several hours can be taken to stretch it.

Hospitalstidende, Copenhagen

February 2, LIX, No. 5, pp. 93-116

132 *Experimental Research With Artificial Pneumothorax and Resection of the Lung. M. Fenger.

132. **Experimental Artificial Pneumothorax and Resection of the Lung.**—Fenger's article is an illustrated description of work in this line on dogs at the Copenhagen Veterinary and Agricultural College laboratory. His assumption that resection of the lung might be facilitated by an artificial pneumothorax was sustained by his actual experience. The operation is much easier with an atelectatic condition of the lung, while the tendency to heal seemed as pronounced in atelectatic as in expanded lung tissue. No evidences of permanent injury of the lung tissue could be detected from shutting off the blood supply for three-quarters of an hour, while this is a great help in operating. A single row of interrupted sutures—after ligating the bronchi and large vessels—is enough to ensure hemostasis and the healing of the defect. A number of technical points are emphasized, such as that the artificial pneumothorax does not modify general anesthesia, that overpressure does not cause the atelectatic lung to expand, suggesting that the compression causes the walls of the alveoli and bronchi to adhere together. If this is the case, there is less danger of retention in the finer air passages and consequent pneumonia. Another advantage of the artificial pneumothorax is that it permits ample oversight over the compressed lung when the pleura is opened, while the lung tissue is much easier to palpate. When adhesions prevent complete pneumothorax, even the partial compression is a great aid, and the adhesions render it possible to do the resection without the necessity for a difference in atmospheric pressure.

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February, LXXVII, No. 2, pp. 181-316

133 *Pneumococcus Peritonitis; Four Cases. O. Tandberg.
134 Elderberry Juice in Treatment of Neuralgia. (Hyldebærsaft — av Sambucus nigra — som antinevralgicum.) H. J. Vetlesen.
135 *Test for Albumin in Stomach Content in Relation to Digestion Leukocytosis in the Pathologic Stomach. (Salomons prøve og fordøielsesleukocytosen ved ventrikelsygdomme.) N. Paus.
136 *Multiple Tumors. (Om samtidig forekomst av flere selvstændig voksende — "multiple" — svulster.) F. Harbitz. Commenced in No. 1.

133. **Pneumococcus Peritonitis.**—In Tandberg's four cases the patients were little girls from 3 to 12. Two were from a locality where pneumonia had been unusually prevalent. The onset was stormy in all, with fever and abdominal pains, vomiting in three cases; two of the children had diarrhea from the first, the others not until the third or seventh day; it subsided in two but in the others kept up intermittently throughout. One of the children developed pneumonia at the same time as the peritonitis, two others two or four days later, while the lungs did not seem to be affected in the fourth case. The appendix was incriminated at first, but the copious turbid pus, with the clumps of fibrin, suggested pneumococcus peritonitis as soon as the peritoneum was opened up, especially as the appendix seemed to be normal. The absence of "perforation shock" also aided in excluding appendicitis as responsible for the peritonitis. The abdomen was distended and tender in all, with rigid muscles, but not to the degree usual with peritonitis of other origin. There was an area of dulness on each side in one of the cases. Pneumococci were found in the pus in the three cases examined. On agar both pneumococci and staphylococci grew from the pus in one case and the former alone in two cases. One child, with the operation the second day, was dismissed in good condition the second month, the others, with operation not until about the seventh day could not be dismissed until after four months, but all recovered after multiple incisions and provisions for ample draining.

135. **Determination of Albumin in Stomach Content as Test for Gastric Cancer.**—Paus has applied Salomon's test for albumin in stomach content in 6 cases of known cancer, in 5 of gastric ulcer, and in 9 persons free from gastric symptoms. The findings are tabulated. The response was positive in only 5 of the 6 cancer cases. With ulcer, the reaction was always slight or negative, so that a pronounced reaction is good presumptive evidence of cancer, but when this occurs the symptoms usually point to cancer without necessity for any test. Paus investigated in the same patients further whether there was a digestion leukocytosis with cancer. He found it present in a moderate degree in the 6 cancer cases, more marked in the cases with normal stomach, while in 2 of the 5 ulcer cases there was no appreciable increase in the numbers of leukocytes after the midday meal. Analysis of these cases showed that digestion leukocytosis is evidently dependent on the functioning of the stomach as a whole, both chemical and mechanical, and has no differential significance.

136. **Multiple Tumors.**—Harbitz relates that in the last fifteen years he found cancer in 14.5 per cent. of the 3,613 cadavers examined. In 103 cases multiple tumors were found, that is, in 2.8 per cent. of all the cadavers, including 51 cases of associated malignant and benign tumors and 16 cases of multiple cancers of different types. This latter group forms 0.44 per cent. of all the cadavers and 3 per cent. of the cancer cases. In 2 cases both sarcoma and carcinoma were found separate, and in 2 cases combined; in one case there were three separate carcinomas and in 3 others carcinoma was associated with glioma or endothelioma. In some cases there were associated two or more tumors, all of manifest congenital origin. A detailed and illustrated description is given of 3 new cases of a sarcoma developing secondarily on an abdominal metastatic carcinoma from an ovarian cancer. In another case a mammary tumor proved to be a sarcoma-carcinoma with features suggesting an embryonal origin. He remarks in concluding this long study of multiple tumors that he has found nothing to throw light on the etiology and, in particular, nothing to suggest an infectious origin.